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MODERN MEDICINE AND BACTERIOLOGICAL REVIEW.

Bulletin of the Sanitarium Hospital and Laboratory of Hygiene.
SANITARIUM, BATTLE CREEK, MICH.



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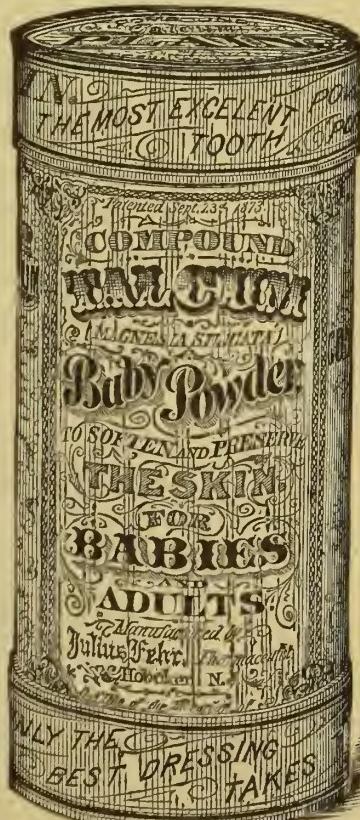
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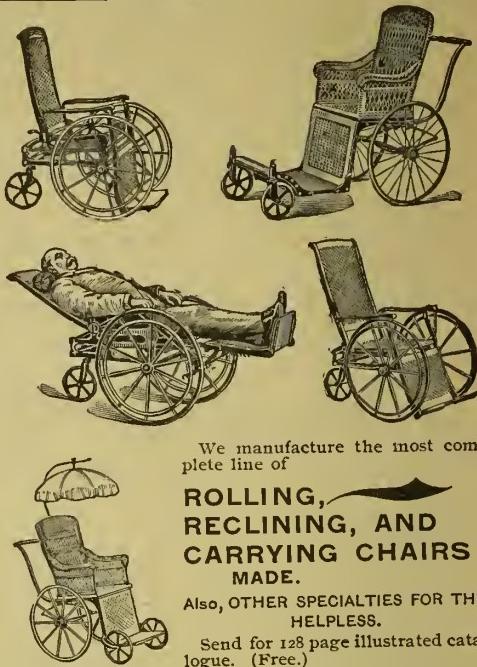
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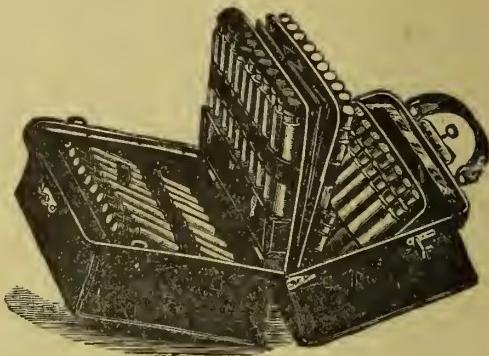
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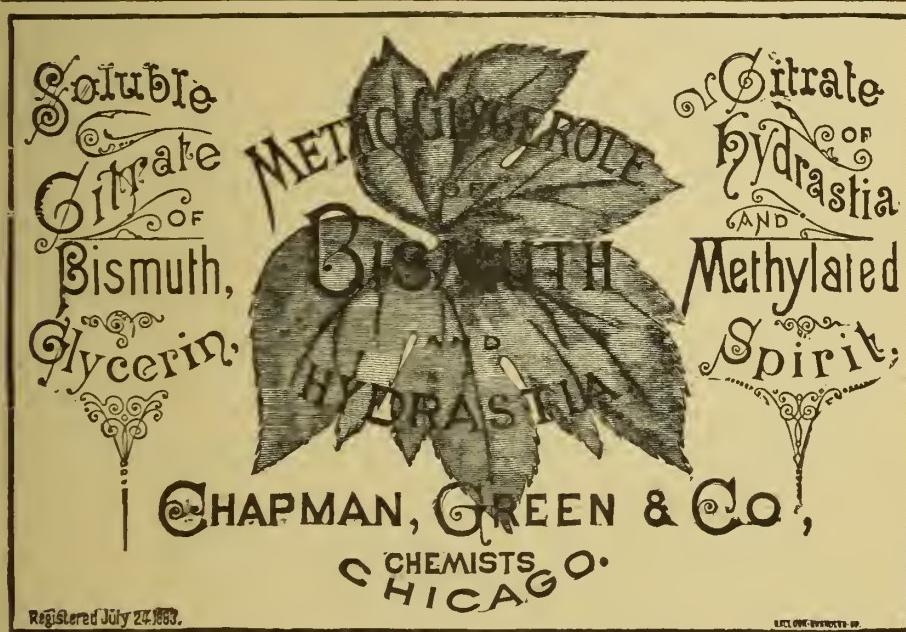
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BATTLE CREEK, MICH., U. S. A., JANUARY, 1894.

NO. 1.

ORIGINAL ARTICLES.

THE VOLUNTARY MOTOR MECHANISM AND SOME OF ITS DISEASES,—MOTOR PARALYSIS, WITH ILLUSTRATIVE CASES.

BY W. H. RILEY, M. D.,
Sanitarium, Battle Creek, Mich.

Member of the American Neurological Association, etc.

(Continued.)

CAUSES OF MOTOR PARALYSIS.

THE limits of the present paper will not allow us to enter into a discussion of all the diseases that affect the motor area of the brain and the motor tract. We shall therefore confine our remarks to diseases that produce destructive changes of these parts. And since destructive lesions along the motor path always produce a loss of voluntary motion more or less complete in some part of the body, the remarks that follow may properly be considered under the head of motor paralysis.

The causes of motor paralysis may be considered as predisposing and exciting. The predisposing causes relate to heredity, habits, occupation, age, sex, diatheses, infections, poisons. Very few diseased conditions that produce motor paralysis can be said to be directly inherited. Nevertheless, in pseudo-muscular hypertrophy, and in progressive muscular atrophy, the hereditary element is by no means latent. Many cases of paralysis, especially in young subjects, are due to syphilis which has been inherited. Certain diatheses, as the gouty or rheumatic, which may lead up to some form of paralysis, may have in them an element of inheritance. A poorly developed or poorly nourished nervous sys-

tem, one well prepared to take on diseased conditions which may manifest themselves in motor paralysis, may be inherited. The mother transmits neuropathic tendencies more than the father.

Most cases of motor paralysis begin their course before the age of ten years, and after the age of forty years. A large majority of the cases that begin before the age of ten years develop during the first three years of life. Between the ages of ten and forty years, paralysis does develop, but these cases are fewer than outside these limits. Paralysis is much more frequent in the male than in the female. Occupations that necessitate exposure, predispose to paralysis. The excessive use of alcohol is a most prolific predisposing cause of paralysis. The rheumatic and gouty diatheses; certain infections, as that of syphilis, diphtheria, beriberi, typhoid fever; and poisons, as alcohol, arsenic, lead, mercury, etc., take an active part in predisposing or exciting motor paralysis.

Strictly, paralysis does not apply to a morbid process or a diseased condition, but is rather a symptom pointing to destructive processes in some part of the motor mechanism.

The real, direct, or exciting cause of motor paralysis is, as has already been expressed, a destructive lesion somewhere along the motor path. This destructive process may be inherent in the nerve tissue proper, in the nerve cell or nerve fiber or both. In such a case it practically amounts to a primary degeneration, and is most probably caused by some defect in nutrition, or, as pointed out by Dana, to some poison acting directly on the nerve cell or fiber. The destructive process in cell or fiber may be secondary to another morbid process or condition, which affects primarily the non-nervous tissue (connective tissue, blood vessels, lymphatics) of the nervous system; and secondarily the

nerve tissue proper, nerve cell, and fiber.

The morbid changes that begin in the non-nervous tissue are inflammations, diseases of the blood vessels, resulting in hemorrhage, thrombosis, or embolism, morbid growths, including tubercle and syphiloma. The fact should be emphasized that inflammation is a process that in the nervous system, as well as elsewhere, is concerned primarily with connective tissue, blood vessels, and lymphatics. Primarily the nerve cell or fiber act no part in an inflammation, and indeed it may well be doubted if they are really active in any part of the process. They may be entirely destroyed by the process, but it would seem more natural to consider this as a result of the inflammation rather than a part of it.

The cause that is active in producing inflammatory changes in the nervous system is always some irritant poison. This may be of microbic origin, or a product of tissue change and waste, or it may be formed during the degeneration of some element, as a nerve fiber. The presence of an irritating poison from any of these sources is sufficient to keep in progress the inflammatory process. Indeed, it is difficult to conceive, in the light of our present knowledge, how an inflammation can be maintained and progress without the presence of such a cause constantly acting. In harmony with this idea we may suppose that when the cause, the irritant, is removed, the inflammatory process would subside, and indeed such we have reason to conclude is the case.

A correct appreciation of inflammatory processes as they affect the nervous system, and their causal relation, is not without its practical value in the treatment of the disease.

Diseases of the blood vessels resulting in hemorrhage, embolism, or thrombosis, and morbid growths, more often produce paralysis by affecting that part of the motor mechanism within the cranium. Inflammation and degeneration produce paralysis mostly by affecting the motor path in the spinal cord, the nerve trunk and its branches, or the muscle itself.

Paralyses that are caused by diseases of the blood vessels, or morbid growths, or degenerative processes, usually occur after the age of forty years, or during the degenerative period of life. At birth and during infancy paralysis is frequently

caused by the accidents and injuries incident to childbirth, which produce hemorrhage, or some destructive process in the motor area of the brain; and by inflammatory processes which are particularly prone to affect the motor cells in the anterior horn of the grey matter of the spinal cord, producing the so-called infantile paralysis, or more scientifically, anterio-polio-myelitis. Inherited syphilis may also produce paralysis in early life.

During middle life, paralysis is more often caused by some form of inflammation; frequently by some disease of the blood vessels, morbid growths, and acquired syphilis. The form of paralysis that is caused by disease in the brain is almost always hemiplegia, a paralysis of one side of the body opposite to the lesion in the brain. The reason for this will readily be understood when we remember that the two motor tracts in the brain are separated a considerable distance throughout the greater part of their course, and a lesion which would affect the pyramidal tract in one hemisphere of the brain would of necessity have to be very large in order to affect those of the other hemisphere. However, as the pyramidal tracts pass downward from the motor area, they constantly converge together, and in the medulla form two bands of fibers lying closely adjacent to each other on each side of the median line, forming the pyramids of the medulla. A tumor, then, growing in the medulla in this region, might produce a paralysis on both sides of the body below the lesion, by its involving both motor paths. The most common seat of the disease which produces hemiplegia is in or near the internal capsule of the brain. The artery which is above all others liable to hemorrhage is the lenticulo-striate (artery of hemorrhage, Charcot), a branch of the middle cerebral artery. A hemorrhage of this artery produces a hemiplegia by the pressure from the blood clot on the fibers as they pass through the internal capsule. The seat of a lesion of this kind is shown in the frontispiece. The blood clot itself may be outside but adjacent to the capsule.

It is far beyond the limits of this paper to enter into a detailed report of all the symptoms referable to all the different forms of paralysis. There are, however, some general principles which may properly be indicated here.

1. Motor paralysis is always caused by some destructive process which may be located anywhere along the motor path from the motor area of the brain to the muscle paralyzed. 2. When the cause of the paralysis is in the upper segment of the motor path; that is, when it affects the motor area or the pyramidal tract anywhere along its course from the motor area to the anterior horn of the grey matter of the cord, the paralysis is not attended with any rapid wasting of the muscles paralyzed. The tonicity of the muscles is increased, and very frequently they are in a rigid condition. The reflexes, both deep and superficial, if not immediately, are very soon exaggerated. The electrical irritability of both nerve and muscle remains normal. 3. When the paralysis is due to any cause that affects the lower segment of the motor path, which includes a spinal motor cell, its axis cylinder process, and the muscular fiber with which it is connected; or, to put it more generally, when the anterior horn of the grey matter of the spinal cord, the nerve trunk or its branches, or the muscle itself, is affected, there is attending the paralysis a rapid wasting of the muscle, the tonicity is diminished, and there are electrical changes in the irritability of both nerve and muscle, the degree of which depends on the severity of the case. These changes in the irritability of nerve and muscle were first worked out by Erb and Ziemssen, who formulated them into the following laws:—

"In the first degree, or partial reaction, faradic and galvanic nerve irritability is preserved, but weakened; galvanic and faradic muscle irritability is preserved; but the contractions, instead of being short, sharp, and quick, are slow and vermiciform.

"In the second degree, or complete degenerative reactions, the galvanic and faradic nerve irritability and faradic muscle irritability are lost, but the galvanic muscle irritability is increased. The action of the poles is reversed, the anode closure reaction being greater than the cathode closure. The contractions are slow and vermiciform.

"In the third degree, or severe type, there is entire loss of galvanic and faradic nerve and muscle irritability."

In certain cases, particularly in paralyses due to neuritis, the galvanic and

faradic nerve irritability may be increased for a short period before the degenerative reactions of the first or second degree appear.

METHODS OF TREATMENT.

The thing of first importance is that the physician should make a careful examination of the patient. He should be able to locate the seat of the disease, and as far as possible determine the nature and cause of the morbid process. We have already indicated that paralysis may be caused by a destructive lesion situated anywhere along the motor path from the motor area of the brain to the muscles. It becomes the duty of the physician to locate along this line, that point where is situated the diseased condition that produces symptoms of paralysis, and to determine whether the lesion is vascular, inflammatory, or degenerative in character, or whether the paralysis is caused by a morbid growth. To simply make a diagnosis on general principles and call the disease "paralysis," comes far short, in the light of our present knowledge, of a proper diagnosis of diseased conditions or of the duty which the physician owes his patient. In order to make a careful diagnosis of the disease affecting the motor path, the physician must have a thorough knowledge of the anatomy and physiology of those parts concerned in executing voluntary movements, and must be able to detect any deviation from normal physiological action.

With a clear conception of the location and nature of the disease, the physician should at once direct his efforts toward removing the cause or causes which produce symptoms of paralysis. In a large per cent of the cases of paralysis, the disease is caused by inflammatory or degenerative changes in the nervous system. These morbid processes are always attended by the presence of toxic substances in the tissues at the seat of the disease. An important part of the treatment of inflammation and degeneration of the nervous system is to remove these poisonous substances, for their presence in the tissues tends to keep alive and to increase these pathological processes. For this purpose nothing is better than the free use of water taken internally. At least three to five pints of water should be drank during the twenty-four hours. It should be taken in moderate quantities

at intervals between meals. By keeping a large amount of water in the tissues, poisonous substances are more perfectly thrown into solution, and are thus put into a condition favorable for elimination. The free use of water also increases the activity of the eliminative organs, and favors healthy nutritive changes in the tissues.

If the general nutrition of the patient is at all faulty, this should receive proper attention by placing him under favorable hygienic conditions, with a generous, wholesome, nutritious diet, rest, and such tonic treatment as may be indicated in his particular case. Besides the above, treatment should be directed to the seat of the pathological changes which are the cause of the paralysis, as well as to the muscles paralyzed.

The remedies which are most useful for this purpose are electricity, massage, various forms of mechanical and manual movements, hydrotherapy, exercise, rest, and medicinal remedies. Of these remedies, in most cases, electricity, massage, and hydrotherapy will be found to be the most useful. Those remedies should be selected which are best adapted to the particular case in hand.

In the use of electricity, a careful examination should be first made of muscles and nerves, and the form of current used which is best adapted to the case in question. Much good may often be derived by passing the galvanic current directly through that part of the nervous system which is the seat of the disease.

The value of massage in treating paralysis depends largely upon the skill of the operator. The same care should be taken in prescribing this as in prescribing other remedies.

Hydrotherapy is a most valuable remedy in the treatment of paralysis, as well as in all other forms of nervous affections. It affords a means by which the nervous system may be powerfully impressed either by the direct effect of heat or cold on the nerve centers, or by affecting those centers reflexly by peripheral stimulation.

Rest in some cases and exercise in others are also valuable adjuvants in the treatment of paralysis, when combined with other remedies.

Those drugs which science and experience have proven valuable may also be combined with any or all the foregoing remedies, often with good results.

The writer has made use of the above remedies in the treatment of hundreds of cases of various organic diseases of the nervous system, attended with some form of paralysis. Most of these cases have been of long standing, and were certainly the most difficult to manage. The results of treatment, however, have for the most part been gratifying to both patient and physician. Vastly better results are obtained in the treatment of all forms of paralysis in a well regulated and equipped institution, where the above remedies are scientifically applied, and where the daily life and habits of the patient are directly under the care and control of his physician, than can be obtained without these remedies and conditions.

(To be continued.)

THE RELATION OF RECENT BACTERIOLOGICAL STUDIES TO THE ETIOLOGY OF TYPHOID FEVER.*

BY JOHN H. KELLOGG, M. D.,
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THE very large contribution made by typhoid fever to the death-rate in suburban and rural districts renders important the careful consideration of every new fact bearing upon the etiology of this grave infectious malady which may be presented as the result of authoritative investigation or research. The truth of this statement is emphasized by the fact that notwithstanding the discovery of a specific microbe by Eberth and the thorough establishment of the bacterial origin of this disease, there have still remained unexplained many anomalous facts quite inconsistent with the theories respecting its etiology which the majority of sanitarians have felt themselves obliged, by the preponderance of evidence, to accept. For example, not infrequently epidemics have occurred under circumstances which have seemed to afford all but absolutely irrefutable evidence of the spontaneous origin of the disease.

Ripley studied typhoid fever in the Fiji Islands at its first known appearance, and was unable to discover any known source of infection. Maclean observed a similar epidemic on the island Ascension,

*Presented at the Meeting of the American Public Health Association in Mexico, December, 1893.

and Metcalf relates a similar experience on the island of Norfolk. In each of these cases the disease was apparently spontaneous.

Numerous other cases, moreover, have afforded so much support to the fermentation theory that there has remained quite a respectable number of well-qualified observers who hold to the views of Murchison, that the disease may originate *de novo* as the result of fermentation or other specific processes occurring in human excreta outside the body.

On the other hand, occasional cases, clearly demonstrating the contagious nature of the disease through personal contact of the well with the sick, have served to confirm the views of those who hold the theory of its specific character, as have also the results of inoculation experiments, apparently at least, in the hands of a few observers.

Another source of perplexity has been the fact that, notwithstanding the most exhaustive experimental researches conducted by numerous and most thoroughly competent observers, one very important evidence of the specific nature of the disease, or at least of the identity of Eberth's bacillus with the specific cause of this malady, has been lacking; namely, the experimental production of a genuine case of typhoid fever. Inoculation experiments have produced death with some of the symptoms and lesions observed in typhoid fever, but it has been fairly objected to these observations that the lesions produced were not specific—that is, they were identical with the lesions produced by several forms of fatal infection induced in a similar manner.

This conflict of observations and theories has maintained an interest in the experimental investigation of the causes of this very infectious disorder, and with the development of the science of bacteriology and the attention of a large number of most experienced bacteriologists and most acute observers focussed upon the subject, it would be surprising indeed if new and important facts were not elucidated now and then.

The purpose of this paper is to present a sort of summary of work done by various workers in this field within the last three years, particularly respecting observations bearing upon the relation of the bacillus coli communis to the bacillus of Eberth.

The bacillus coli was first isolated by Escherich in 1885, being found in the stools of nursing infants. It was regarded by Escherich as a saprophyte. The peculiarities of this microbe especially noted by Escherich were its remarkable polymorphism and its close resemblance, when grown under certain conditions, to the bacillus of Eberth.

Hueppe, in 1887, called attention to the possible pathological importance of the bacillus coli, having found the microbe in nearly pure culture in cases of cholericine, occasioned by drinking quantities of cold beer, and in cases of cholera nostras. His explanation of the relation of the bacillus coli to these disorders was given in the theory that the microbe, while ordinarily innocuous, became malignantly virulent in consequence of biological changes resulting from growth in a favorable medium.

Rodet and Gabriel Roux began their studies of this bacillus in 1889, when in the study of an epidemic of typhoid fever they found it in almost pure cultures, although Eberth's bacillus could not be found. The bacillus coli was also found in the drinking water, in the use of which the epidemic originated. A fact which particularly attracted their attention was the discovery of Eberth's bacillus in the spleen of certain cases in which the stools presented nearly pure cultures of bacillus coli, while Eberth's bacillus was absent.

Subjecting the bacillus coli to the experiment of growth in various media, and under various temperatures, they observed that it assumed characters so nearly identical with those of Eberth's bacillus as to make the distinction of the two microbes a matter of no small difficulty. It was also observed that the typical forms of the bacillus coli were more stable than Eberth's bacillus. Other observations led them to the conclusion that Eberth's bacillus is but a modified form of the bacillus coli communis, its special characteristics being the result of the modifying influence of the conditions afforded by the human organism during the passage of the microbe through it.

Since these observations of Rodet and G. Roux, numerous other bacteriologists have taken up the same line of investigation; among others, Vallet, of France, who has made a very exhaustive study of the whole question and presents a very

convincing argument for the establishment of the identity of Eberth's bacillus and the bacillus coli communis. I shall attempt briefly to summarize the facts and observations which he deduced in support of his argument.

Comparing the two microbes, the bacillus of Eberth and the bacillus of Escherich, or coli communis, it is noticeable that both are pyogenic, purulent peritonitis and abscess having been produced by Roux and various other observers, with pure cultures of the bacillus.

Chantemesse and Widal found Eberth's bacillus in an abscess fifteen months after an attack of typhoid fever, and G. Roux found the same bacillus in abscesses of the kidneys and spleen after typhoid.

Bacillus coli has been observed in numerous pathological conditions, as abscesses, peritonitis, suppurative angiocholitis, pleurisy, meningitis, and peritonitis resulting from perforation of the intestines. In several cases of hepatic abscess, the bacillus coli has been found in pure cultures.

Mace and Simonds found pure cultures of bacillus coli in the infectious diarrhoea of infants. Mace also found bacillus coli in the spleen in five cases of typhoid, and Wyss observed cases of fatal infection in the new-born, which he attributed to bacillus coli.

A fact of interest which may be mentioned here is the observation several times repeated in which the bacillus coli was present in water which had given rise to typhoid infection where Eberth's bacillus was not to be found. The frequent absence of Eberth's bacillus from water to which infection could fairly be attributed, has been a great perplexity to observers. M. Rodet recently reported the case of an epidemic of typhoid in which the bacillus coli was found in the drinking water in great quantities, although Eberth's bacillus could not be discovered.

Dr. V. C. Vaughn, of the University of Michigan, has found Eberth's bacillus absent in so many cases in which the water examined was clearly the origin of the disease, that he has been led to attribute specific characters to a number of distinct microbes, the character of which he has carefully studied, not only bacteriologically, but by means of inoculative experiments on animals. The fact that it has not infrequently been possible to

trace an outbreak of typhoid to a recent case, has led to the hypothesis that Eberth's bacillus may preserve its vitality for a long time, in some instances perhaps for a number of years, and under the most unfavorable conditions. This supposition has not, however, been supported by actual experiments. On the contrary, it has been clearly shown that the fluids of vaults are strongly toxic to Eberth's bacillus. It may be argued, and clearly with fairness, that the observations referred to respecting the relations of bacillus coli and typhoid fever are substantially identical with those which are relied upon to demonstrate the relation between Eberth's bacillus and this disease. It is found present in the disease, in both its primary and secondary lesions. The bacillus coli is found in waters which have given rise to epidemics of typhoid fever. It is generally conceded that the typhoid bacillus undergoes a transformation in the body, probably in the intestines. This being the case, Eberth's bacillus ought to be found always present in the excreta of typhoid patients; but instead of this being the case, Gaffky, who made a more careful study of Eberth's bacillus than did Eberth himself, although subsequent to its discovery by Eberth, declared that he never found the bacillus in the excreta of typhoid patients.

Rodet and Roux found bacillus coli in the fecal discharges of typhoid cases, but never observed Eberth's germ. A few observers, however, have reported finding Eberth's microbe in the discharges of typhoid patients between the tenth and twenty-second days, which is easy to explain by the fact that it is during this period that the eschars from Peyer's patches are cast off. But as ulceration of Peyer's patches does not always occur, Eberth's bacilli are not always found in the excreta.

Charrin and Royer found the bacillus coli in the pleuritic fluid obtained from a case of hemorrhagic pleurisy occurring as a complication of typhoid, and on making a potato culture of the bacillus, observed that it presented characters nearly identical with those of Eberth's bacillus.

In another case Mace obtained bacillus coli from the spleen of a typhoid patient by puncture, while Eberth's bacillus was absent.

The biological characteristics of the

bacillus coli, and Eberth's bacillus as noted by different observers, are as follows : —

Eberth's bacillus usually grows as an invisible film, but sometimes assumes a brown color similar to cultures of bacillus coli, as observed by Fränkel and Simonds.

Bouchler produced luxuriant potato cultures of Eberth's bacillus of a brown color by rendering the medium alkaline with carbonate of soda. Malvos has also observed a brown colorization in cultures of Eberth's bacillus. The cultures of bacillus coli vary in color, from an almost colorless film to a thick brown coloration.

It is claimed by Chantimesse and Widal that Eberth's bacillus produces fermentation of milk sugar, while bacillus coli does not. This is not necessarily a distinctive characteristic, however, as it is well known that the yeasts may be deprived of their power of producing fermentation by growth under peculiar conditions.

It will thus be seen that there are no distinguishing features sufficiently characteristic to clearly separate the two microbes. The chief difference seems to be that the bacillus coli possesses greater vitality, is more vigorous in growth, and is more resistant. Eberth's bacillus seems to be an attenuated organism.

Inoculation experiments made by Vallet and Mace gave the same results for the bacillus coli as for the bacillus of Eberth.

Fränkel produced ulceration of Peyer's patches in guinea-pigs by inoculation with Eberth's bacillus in 1886.

Chantimesse and Widal obtained the same results in a rabbit in the following year.

The lesions obtained by inoculation with the bacillus coli are thus stated by Mace in his treatise on biology : —

" Les cultures inoculées aux lapins et aux cobayes par injections souscutanées ou intra-veineuses, amènent la mort dans un laps de temps variant entre 1 à 3 jours. Les symptômes qui suivent l'injection sont de fortes diarrhées et une sorte d'état comateux. A l'autopsie, on trouve l'intestin fortement hypérémisé, présentant de nombreuses taches rouges, les plaques de Peyer tuméfiées et souvent de l'épanchement dans le péritoïne." (The italics are ours.)

Vallet obtained identical results in two guinea-pigs inoculated with the bacillus

of Eberth and three animals of the same species inoculated with the bacillus coli. There was congestion of the spleen and tumefaction of Peyer's patches in both cases.

The virulence of bacillus coli was found to be very variable. As ordinarily found in the intestine, its virulence is comparatively slight, but it is modified by certain conditions which increase its virulence to an extraordinary degree.

In one case, Vallet obtained Peyer's patches with a particularly virulent culture of bacillus coli. By passing a virulent culture through the guinea-pig several times in succession, its virulence is modified, and these modified cultures resemble very closely attenuated cultures of Eberth's bacillus, becoming filamentous in form and very mobile. It is not claimed by any observer that a complete and absolute transformation of the bacillus coli into the bacillus of Eberth, or the reverse, has actually been observed. It is only claimed that the effects produced by the two microbes are identical. That the bacillus coli should present itself in two conditions, one pathogenic and the other non-pathogenic, is certainly not novel to bacteriology. The same is true of the diphtheria bacillus and others.

The study of the bacillus coli, as found in vaults and cesspools, made by Vallet, presents some points of special interest. The paucity of our knowledge of the relation of the bacteria found in vaults to typhoid epidemics is due to the fact that most of the studies concerning vaults in relation to typhoid fever have been of chemical nature, little attention having been given to the bacteriology of the subject.

Escherich, in the study of fresh fecal matters, isolated the bacillus coli communis and the bacillus lactis aërogenes. The principal previous studies of this subject were made by Uffelmann, who found that the bacillus of Eberth disappeared from a slightly acid mixture of feces and urine at the end of a month, the cultures being kept at a temperature of 20°. In a tube exposed to ordinary temperatures, the bacillus disappeared at the end of three weeks. In a culture medium composed of rainwater, dry earth, and fecal matter, there was a relative increase in the number of bacilli. No observation was made concerning the absolute number of bacilli at the beginning and end of the experiment.

In Vallet's experiments, Eberth's bacilli were added to liquid obtained from vaults, and carefully filtered through a Pasteur filter. In this medium he found that the bacillus of Eberth invariably disappeared or died within a few days, while the bacillus coli communis remained alive and multiplied rapidly.

Uffelmann showed that the bacillus of Eberth remained alive in water obtained from the wells of Rostock at atmospheric temperature only two weeks, while the bacillus of charbon survived over three months in the same water. It thus appeared that Eberth's bacillus is the specific medium of infection in typhoid fever. Fecal matters contained in the vaults or cesspools, constituting the sources of contamination of the drinking water in a given case, must be very frequently infected in order that they should preserve their virulence, since these microbes can survive under conditions afforded by a vault, only a week or two at most.

The bacillus coli, on the other hand, not only thrives, but increases in virulence under the same circumstances.

The comparative inoculation experiments made by Vallet showed the bacillus coli of the vault to possess a virulence far exceeding that of either the bacillus coli obtained from the intestine or from fresh feces, or the bacillus of Eberth; from which the conclusion is drawn that the growth of the bacillus coli, under the conditions afforded by the vault or cesspool, render it exceedingly virulent. In one case of inoculation with bacillus coli from a vault, the animal, a guinea-pig, presented the most characteristic lesions which have been observed to follow inoculation with Eberth's bacillus, such as enlargement and congestion of the spleen, the liver, tumefaction and ulceration of Peyer's patches, etc.

The virulence of the bacillus coli was found to be increased during an attack of typhoid fever. This fact would seem to explain the contagion sometimes observed in severe cases.

Inoculation made with filtered liquid from vaults, exerted a protective influence, which was also observed in the ingestion of water containing 30 to 40 c. c. per liter of liquid from a vault. Four rabbits, two of which were protected by filtered vault liquid, the others not, were inoculated with Eberth's bacillus. The protected rabbits, at the end of nearly two

weeks, presented no material change. The rabbits which were unprotected, although not dead, were greatly emaciated and suffered from severe diarrhoea. The protecting influence of the use of contaminated water, even against Eberth's bacillus, as shown by Vallet's experiments, explains the fact so often noted by sanitarians, that visitors to an infected locality are more likely to suffer from the disease than are residents.

(To be continued.)

THE INTERNAL SECRETION OF THE KIDNEYS.

DEMONSTRATED BY PHENOMENA OF ANURIA AND URÆMIA.

BY M. BROWN-SEQUARD, M. D.

Translated from *Archives de Physiologie* for November, 1893.

(Concluded.)

THESE cases clearly show, then, that it is not alone the accumulation in the blood of the principles previously evacuated by the urinary secretion which determines the uræmic phenomena in experiments in which the operation of nephrectomy, or ligation of the ureters, is performed. These cases certainly show that there is another cause much more powerful, and especially much more prompt to act, which is the cause of the phenomena in these experiments. This cause is brought forward in the experiments which I have made with d'Arsonval, demonstrating that the uræmic phenomena which supervene after nephrectomy, disappear when we inject into the blood of an animal without kidneys a liquid drawn from the renal parenchyma.

The history of injections of the juice of the glands demonstrates that the liquid which is employed contains elements of an internal secretion of the glands. The active cause, then, in the cases in which I have experimented, is in the internal secretion of the kidneys. This secretion exists in anuria when a portion, at least, of the kidneys remains in a normal state. It is lacking in cases in which the anuria appears in persons affected with organic lesions involving the whole or both kidneys, cases in which, if anuria occurs, the uræmic conditions previously present lead rapidly to death. Both experimentation and clinical facts show us that uræmia always co-exists with the absence

of internal secretion. Uræmia may be absent, and it even is often absent, notwithstanding the suppression of the external (urinary) secretion, when everything seems to show that the internal secretion continues.

For those who are acquainted with the admirable researches which science owes entirely to the French physiologists, Feltz and Ritter, Bouchard, Mairet and Bosc, and L. Guinard, upon the toxicity of the normal urine, it may seem that the view which I maintain with reference to the origin of uræmic phenomena is entirely false. I will only say:—

1. That if the principles which are found in the urine, and which produce the toxic phenomena, were, as is believed, only excretions, their presence and their accumulation in the blood in anuria, should determine, in all cases, this phenomena at the end of a few days,—two, three, or four,—and it is not thus, as we have seen.

2. That if the uræmic phenomena depended alone upon the accumulation in the blood of the principles pertaining to the urine in cases of nephrectomy, these symptoms should not disappear when we inject a renal liquid in animals deprived of the kidneys.

In his admirable work upon the auto-intoxications (*Leçons sur les Auto-Intoxications dans les Maladies*, Paris, 1887, p. 69), Bouchard has maintained, not without some hesitation, the idea that the symptoms resulting from injections of normal urine are identical with the phenomena of uræmia. I do not desire to examine this question to-day. I will only say that this resemblance between the poison resulting from the injection of urine and the morbid manifestations of maladies of the kidneys, is not much greater than the resemblance existing between the symptoms resulting from the injection of urine and the phenomena which are observed to follow the absence of certain internal secretions (those, for example, of the thyroid, or of the pituitary body). It is thus that the absence of the internal secretion of the kidney causes the appearance of those phenomena of uræmia which resemble the effects produced by injection of urine.

Further, we may justly inquire if the urine may not contain toxic elements which are not yet known, and which are

formed rather than excreted by the kidney. This being the case, we may easily comprehend that the accumulation within the blood of principles which are normally secreted by the kidney, would not produce the phenomena which are observed after the injection of urine.

As to the toxicity of the normal urine, I can say that both d'Arsonval and myself have found that we can inject with impunity considerable quantities of this liquid into the veins of rabbits, if it has been previously passed through the apparatus of d'Arsonval, filtered and sterilized under high pressure with carbonic acid gas. The maximum quantity thus injected without injurious effect has been found to be 110 gr. per kilogram of animal,—an enormous quantity, since, according to Bouchard, water begins to show itself noxious when one has injected 90 gr. per kilogram of animal, and produces death at 122 gr.

We have made the injections very slowly (one to two hours). The slowness of these injections permitting by a very abundant diuresis,—a rapid evaporation of the urinary principles considered toxic,—we can draw from these effects no positive conclusions.

[These experiments are evidently of no value. We have been able to inject an almost equal amount of urine without taking the precautions named, by prolonging the operation to a half hour, thus giving time for the removal of the toxic matters by diuresis, in which case a much smaller dose was found to be fatal if injected rapidly in the usual way.—
J. H. K.]

Conclusions. — 1. Cases of anuria of long duration without morbid manifestations, and cases of the disappearance of the symptoms due to nephrectomy under the influence of injections of renal juice, show that the kidney possesses an internal secretion extremely important in character.

2. The comparative study of anuria and uræmia, and of the facts discovered by d'Arsonval and myself, and confirmed by Meyer, render it extremely probable that the phenomena of uræmia are due especially to the absence of the internal renal secretion, and not, as has been believed, to the alteration of the urinary secretion and the consecutive accumulation of certain toxic principles in the blood.

TRANSLATIONS AND ABSTRACTS

[THE articles in this department are prepared expressly for this journal.]

THE POISONS OF THE URINE.

BY PROF. A. CHARRIN, M. D.,

Physician to the Hospitals of Paris, Member of the Society of Biology, and Director of the Laboratory of General Pathology.

Translated by J. H. Kellogg, M. D.

1. Role of Auto-Intoxications in Biological Phenomena.—The toxic substances of the body occupy a very important place in the genesis of biological phenomena, and in the production of those conditions upon which health, disease, and death depend. These substances owe their influence sometimes to their number, sometimes to their variety, and sometimes to the multiplicity of their properties. They are found in the bladder, the stomach, the intestines, the blood, the lymph, the muscles, the liver, the spinal cord,—in a word, in all the different systems and organs of the body. The most of them are stable compounds. Some are volatile, some are soluble in alcohol, others are insoluble. Some resist heat; others cannot support a temperature above 60° to 80° C. (140°-176° F.) without undergoing marked changes. Some of these poisons produce rise of temperature, spasms, hemorrhages, and intestinal inflammation. There are others which lower the temperature and produce narcosis, plethora, albuminuria, etc. The maintenance of health requires that poisons received from without, in direct form, or disguised in effects, should be eliminated, changed, or neutralized.

The affections called diathetic, such as gout and diabetes, consist simply in the accumulation of acids or of sugar in excess. Even oxygen, itself a normal principle, may become detrimental if it is introduced in too great quantities, if it is in constant contact with tissues which receive from it no element of their nutrition. Glycogen vitalizes the hepatic cell, while it chokes that of the tubuli. Uric acid and the urate of soda, according to the experiments of Prof. Bouchard, have no great effect upon the system as a whole. Nevertheless, great damage re-

sults if these substances are deposited in the articulations, and still more, if they are deposited in the kidney.

Besides these substances of moderate potency, there are others, as acetone, certain fatty acids, and certain others which are able to produce cerebral symptoms of the most terrible character, as paralysis, convulsions, delirium, coma, and bulbar poisoning, as shown by the respiration of Küssmaul, etc.

In cases of Bright's disease, headache and motor disorders are frequently present. These persons are also a prey, in numerous cases, to attacks of loss of consciousness and collapse, and also present the phenomenon of Cheyne-Stokes.

The liver does not escape all the influence of these poisons. Some poisons are received from without, as phosphorus, mercury, arsenic, and alcohol, which are capable of altering the structure of the liver. On the other hand, clinical observation shows us that the tissues of the gouty, as well as those of the diabetic, also manufacture products of which some are not indifferent in relation to the hepatic gland. Congestion, stasis, and pigmentary cirrhosis result from these processes.

Experimentation has partially reproduced these lesions. The ingestion of ethereal liquids, by hogs in particular, produces at first a limited embryonic proliferation in the perilobular spaces, and naphthal in solution in alcoholized water produces, when introduced into the portal vein, a most manifest sclerosis accompanied by fatty degeneration of the organ.

From these researches of Prof. Bouchard we may, among other conclusions, deduce the fact that it is possible to produce some forms of inflammation without the intervention of microbes.

By injecting urate of soda and lactic acid into the vessels, I have myself succeeded in producing modifications, especially of the tissue elements. With Pavone, I have obtained analogous results, although with difficulty, by employing toxines of microbic origin.

Clinical observation shows us how numerous are the germs capable, in various degrees, of producing lesions of the biliary organ, and all are acquainted with the fact that the toxic action of these germs is due to poisons produced by them.

What is true of the liver is no less true of the kidney. Nephritis is due to the passage through the kidney of poisonous matters. Among these matters, there are some which come from the outside, as, for example, cantharidine, sublimate, etc. Others are the result of the intimate nutritive processes of our tissues, for example, glycogen and the urate of soda ; many of these poisons are derived from the secretions of bacteria.

It is of little importance what is the agent which excites degeneration,—the microbe of grave icterus, the bacillus of tuberculosis, the streptococcus, the bacterium coli, the phosphorus, mercurial compounds, or a disturbance of internal nutritive origin ; from the moment when the hepatic cell undergoes the fatty transformation, a series of symptoms appear, which, although primary causes may differ, vary only within feeble limits, since they depend directly neither upon the poison nor the diathesis, but upon the destruction of the parenchyma of the liver. In these cases we also observe hemorrhages, delirium, coma, and elevation of temperature.

In the course of extra intestinal affections, from simple gastric disturbance, or slight indigestion, to sausage poisoning of the most pronounced character, we have equally to deal with toxæmia as derived from the introduction of a special agent, such as the bacillus of Gaertner, whether it proceeds from the ingestion of meat containing ptomaines already formed, whether it is a consequence of the activity of the digestive ferments, or by reason of the introduction of some substance favorable to these fermentations. There are also poisons which act through the reflexes, of which the tetany of dyspeptics is an example.

Through the skin escapes, especially, water, fatty acids, urea, etc. If a great part of this membrane ceases its activity, phenomena of poisoning are not slow to appear. Without referring to experiments in varnishing the skin, let us recall what happens in extensive burns, and in various dermatological lesions.

An example of auto-intoxication is presented by the phenomena of overwork. Besides, in cases of this sort, the most exact and positive proof is afforded, on the one hand, by the increase of the toxicity of the contents of the bladder, and on the other, by the accumulations of

acids, especially of perilactic acid. According to Moscatelli and Colosanti, the cerebro-spinal axis is not exempt from the effects of poisons, whether from without, from within, or from the parasitic world. We are acquainted with cases of mental disorder due to toxic agents, as from alcohol and opium, in cases of Bright's disease and of hepatic disease, to the discovery of which I believe I have myself contributed.

The researches of many authors, and especially the works of Mairet and Bosc, have shown the oscillation of the toxic elements of the renal secretion. According as we study simple dementes, idiots, or melancholics, these oscillations relate not only to quantity but also to quality. Thus dogs which have been injected with urine from persons suffering from acute mania, rapidly take on the symptoms of hyperexcitability, fear, etc. Analogous observations have been made in relation to the subject of epilepsy. Let us note, however, that in this respect there are certain disagreements. In a great number of paralyses, in neurotics, in cases of myelitis, whether diffused as in multiple sclerosis, or systematic, as when affecting the anterior cornua, infection, that is to say, poisoning by toxines, is present. Both clinical observation and experimentation unite in attesting this fact.

If we reduce to its simplest elements the nutritive process, we see that it consists of the penetration of the nutritive elements of the plasma into the cells, of their transfusion within the interior of the cell, and finally of the rejection of that which cannot be utilized. But the nervous system, this grand controlling apparatus, in opening and closing the capillary network, producing modifications in the activity of the circulation and in the blood-pressure, holds under its control the arrival of the assimilable elements and the departure of the obnoxious substances ; in other words, it is able to starve or to poison, to say nothing of its immediate and intimate action upon the organs or their forces, without taking account of its trophic power, which gives rise to lesions of the skin, the muscles, the bones, and the cartilages, and which is especially capable of accumulating in the fluids or withholding from them a body eminently necessary, such as sugar, of which it retards or accelerates the consumption.

Although there exists an infinite number of modes of being sick, there are but a small number of modes of becoming sick, as Prof. Bouchard has remarked.

Already, from these considerations, so simple, elementary, and succinct, the role of toxæmia, or better, of auto-intoxication is in the diatheses or the humoral affections, in some nervous affections, in organic lesions of the kidney, liver, etc. The toxic substance may appear at the beginning or at the termination of the drama. This is shown in uræmia and in hepatic insufficiency. In other circumstances its action is not so persistent nor permanent. In traumatism, the microbe with its toxine is secondary.

Bacteria usually modify the system, either in substance or dynamically, by means of their secretions, producing local and general disturbances. By manipulating these secretions in a thousand ways, we may produce elevation or depression of temperature, coma, drowsiness, convulsions, paralysis, hemorrhages, diarrhoea, albuminuria, nephritis, enteritis, pulmonary congestions, and modifications of all sorts. But the tissues of the gouty manufacture principles which produce elevation of temperature. Cells of persons suffering from Bright's disease give birth to multiple phenomena, as diminution of temperature, narcosis, muscular spasms, loss of muscular power, extravasations of blood, inflammations, lacerations of the intestine, oedema of the respiratory passages, etc. The infinitely small is frequently culpable, but let us not always cry out against the microbe. Let us first see if we may not accuse ourselves. Thus, in the mechanism of the physiological state, in the pathogeny of many disorders, even to the causes which ultimately lead to our death, at each instant we are exposed to poisoning by a series of elements.

2. Methods of Studying the Poisons of the Organism.—These considerations, which might easily be multiplied, we think amply justify the study of these elements. To propose a problem is not always to solve it. In order to study these bodies, it is necessary to know where to find them. By means of certain methods (among others, bleeding) we may indeed penetrate the mystery of the living being. These methods acquaint us with different substances, their composition, their qualities, and

their effects upon animals. Recently we have been able, by means of bleeding, to study the oscillations of the toxicity of the serum. But bleeding is rather an accidental method, involving at the outset a certain degree of traumatism; and further, bleeding is commonly called for under conditions of disease which make it a method of cure rather than a method of investigation. The conditions under which this method of investigation is employed, are thus such as remove it more or less from the domain of physiology.

3. Choice of Method of Study.—Since it is important to disturb the organism as little as possible, to avoid shocks, wounds, lacerations, and losses of fluid of any kind, and finally, to approach as nearly as possible to the normal state, we are led to the study of the excretions. We may judge, to some extent, of what transpires in the interior of the body by the study of that which comes out of it. We may determine the activity of a furnace and the character of the substances which have been burned in it, by examination of the cinders. Besides, this method of investigation does not prevent excursions into the depths of the organism when that is required to facilitate investigation.

Thanks to the multiplicity of these emunctories, it is easy to vary the observations, and to control them. Fortunately, these eliminative processes differ very much, one from another. Some of them develop a great quantity of toxic substances, others are very poor in these substances. Some, by their nature and by their mode of action, greatly facilitate the researches with which we are occupied. The majority of them present many difficulties. The kidney is useful above all others of the emunctories for the purposes of an investigation of this sort. No other excretory liquid can be compared in value with the urine. We will study, first, the toxicity of the urine, as this affords us the best means of rapidly obtaining the largest amount of information concerning the special toxic substances of the body. Later, we will study alimentary poisons, intestinal, biliary, hepatic, respiratory, and cutaneous poisons, the poisons of denutrition, poisons of parasitic origin, etc.

(To be continued.)

NEW DEVELOPMENTS IN IMMUNITY.

UNDER the head of "Sero-therapy," Dr. Egasse presents, in the *Bulletin Generale de Therapeutique* (December 15, 1893), some exceedingly interesting information on the subject of immunity, especially in relation to cholera. We summarize some of the effects presented as follows:—

Pawlowski and Buchstaf, two Russian physicians, conceiving the idea that the grave symptoms of cholera are produced by absorption of the pepto-toxines secreted by the comma bacillus, were led to seek in sero-therapy the means of neutralizing these toxines. The immunity of the animals was obtained in the following manner, commencing with the injection of cultures rendered innocuous by exposure to temperature at which the development of the comma bacillus is arrested: Beginning with cultures of feeble virulence, cultures of increasing virulence were employed, ending with those which had been rendered very virulent by passage through many species of animals. Twenty rabbits and twenty guinea-pigs were employed in the experiment. Subcutaneous and peritoneal injections were made, and the virus was also introduced into the stomach by means of a sound. The results were favorable in every case, the vaccinated animals enjoying complete immunity against cholera.

Pawlowski and Buchstaf proposed to employ the serum of immunized dogs. The first injection of the virus in dogs produced diarrhoea and anorexia and general weakness. But following injections, even those made with very virulent virus, produced no reaction, and the serum of these immunized dogs exhibited therapeutic properties of a very pronounced character.

To recognize these properties, the authors began with reactions in vitro which demonstrated its very energetic bactericide properties. They observed not only that the growth of the comma bacillus was prevented by the serum, but further, that a culture of the bacillus in petonized bouillon to which immunized serum had been added, no longer gave, for twenty-four hours, the reaction of Bonavide (the bluish red color of indol, after the addition of hydrochloric acid).

This culture contained then no pepto-toxines

The authors then experimented upon twenty-five animals, with remarkable results. With the serum of animals strongly immunized, they have rendered refractory other animals by injecting .1 or .2 c.c. The injected animals gave no symptoms from doses of the virus which killed animals that had not been protected. Estimating, according to the method of Bruger Erlach, the maximum of the immunizing power which they had been able to reach, they found it to be one to 130,000. This would require, for the vaccination of a man, .55 c.c. of serum. The immunized serum acts not only by virtue of the biological phenomena in the battle of the organism against the invading microbes, but also in a purely mechanical manner, by coagulating the specific toxines which are very unstable. As to the immunity of serum for man, this was established by the injection received by one of the authors by one c.c. of the liquid. No reaction followed.

In one of the guinea-pigs in which the effects of the choleric poison had become manifest, even by the slightest lowering of temperature, was it found impossible to prevent death, even when the amount of serum employed was many times greater than that which was found to be efficient in preventing the disease. The injection of serum must be made before the appearance of the first symptom of the poison; it then prevents death, but does not prevent a development of morbid symptoms.

Klemperer has also made some experiments, after having drawn some blood from two patients who have recently recovered from an attack of cholera. He observed that it was only necessary to inoculate a guinea-pig with 1 c.c. of the serum of the blood of one of these patients, or 50 centigrams of the serum of the other patient, to render the animal refractory to the choleric poison.

A student received, by subcutaneous injection, 50 centigrams of the choleric culture attenuated by heat, and 3.1 grams of very virulent culture. The serum drawn from the blood had acquired an anti-toxic power so great that it was sufficient to inoculate a guinea-pig with 5 milligrams of the serum of this blood to render it refractory to choleric poison. Before employing these injections the

TRANSLATIONS AND ABSTRACTS.

serum of this student was anti-toxic only in the dose $1\frac{1}{2}$ grams, showing that its anti-toxic power had been increased 600 times.

Klemperer made the following experiment upon himself: he took by the stomach at different times, within a space of forty-seven days, half a liter of choleric culture in bouillon, the cultures having been previously heated two hours to a temperature of $70^{\circ}\text{C}.$ ($158^{\circ}\text{F}.$). He observed that the toxic power of his blood serum was 20 times greater than before.

Five centigrams of the milk of a goat rendered refractory to cholera is a certain anti-choleric vaccine for guinea-pigs. Five c. c. of milk of such a goat injected under the skin of a man, produced no morbid phenomena, but conferred upon his serum microbicide properties of such a character that a guinea-pig inoculated with one fourth of a cubic centimeter became completely refractory to choleric infection.

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Intestinal Antisepsis.—Dr. Baczkiewicz, in a recent number of *Wratch*, discusses the question of intestinal antisepsis, reporting the results of experiments which he has recently conducted in the laboratory of Prof. Nencki. Twenty experiments were made upon six persons. The number of microbic organisms contained in each milligram of fecal substance was determined before and after the administration of an intestinal antiseptic. The antiseptics employed were naphthol B. (grms. .60—grms. 1.20 [$9 - 18$ gr.] in 24 hours) and salicylate of bismuth (grms. .30-.60 [$4\frac{1}{2} - 9$ gr.] per day). In a patient suffering from a large intestinal fistula, the author found, before the administration of the antiseptic, 125,000 bacteria in one milligram of fecal substance. After four days of intestinal asepsis, this number had fallen to 54 grms., and after thirteen days (11 gr. of naphthol B. having been administered), the number of bacteria had fallen to 18,000. At the same time there was a marked diminution in the odor of the fecal substances.

In a patient affected with a cæcal fistula, the number of bacteria was diminished from 1,860,000 to 92,000, 8.75 grms. of naphthol B. having been taken in the space of nine days.

In a third case of chronic diarrhoea, the results were not very conclusive in consequence of the presence of pus in the stools.

In a case of general bad nutrition, the author administered salol (11 grms.) in the space of five days, but without effect upon the number of bacteria in the fecal masses.

Iodol administered to a diabetic in doses of 3 grms. per day, produced no bad effect upon the general state; however, the number of intestinal bacteria fell from 3,080,000 to 232,000 after two days, and to 18,000 after five days.

Tannin administered in cases of gastrointestinal catarrh, in doses of 30 centigrs. per day, diminished the number of bacteria, after three days, from 470,000 to 14,000.

From these results it is clear that the various substances named, possessed real value as intestinal antiseptics. The efficiency of tannin is particularly interesting. Less than one gram of tannin diminished the number of bacteria more than thirty times in three days, while six grams of iodol, more than six times as much, diminished the number of microbes less than thirteen times in two days, and nearly nine grams of naphthol B. diminished the number of bacteria only about twenty times in nine days. A combination of naphthol B. and salicylate of bismuth diminished the number less than two and one half times in four days.

From this showing, tannin is really one of the most efficient of all germicides for use as an intestinal antiseptic, and it has the great advantage that it can be taken in large doses and used for a considerable length of time without toxic effects. We have for several years employed this agent as an antiseptic in cases of chronic intestinal catarrh, and with most excellent effects. When administered by the mouth, we have usually given 3-5 grs. in capsule two or three times a day, but we have found most excellent effects, especially in cases of pseudo-membranous catarrh of the intestines, from the employment of large coloclysters, first washing out the bowels with a large quantity of hot water, then injecting a solution of tannin consisting of four grms. (60 grs.) of the drug in a liter of water.

Albuminoid Substances in Milk.— Does milk contain, as albuminoid substances, only casein, as M. Duclaux maintains, or does it contain, besides, an albumin and a globulin, as maintained by Hammarsten and Sebelein? When we saturate milk with chloride of sodium 16-20 per cent, a precipitation of casein occurs. A precipitate is produced in the filtered liquid when saturated with sulphate of magnesia. It then contains a globulin. When the milk is saturated with sulphate of magnesia 15-20 per cent, both the casein and the globulin are precipitated. The filtered liquid precipitates by the addition of acetic acid or sulphate of soda to saturation. It thus contains an albumin (Hammarsten).

M. Duclaux criticises these experiments, and combats the interpretation of the facts proposed by Hammarsten and Sebelein, maintaining that the albuminoid substance which remains in solution after saturation of the milk with chloride of sodium or sulphate of magnesia, is a remainder of casein (Duclaux). Sebelein isolated the substances considered by Hammarsten as lacto-albumin and lactoglobulin, and showed that their solubilities, their mode of precipitation and of coagulation, relate them to serum albumin and to serum globulin.—Translated from the *Archives de Physiologie*.

New Mode of Treating Erysipelas.— Chouriloff, of Russia, has recently treated a number of cases of erysipelas in the Alexander Hospital at St. Petersburg by means of ortho-brom-phenol, a substance which is very soluble in water, alcohol, and alkaline solutions, and is applied in the form of a pomade containing one or two per cent of the drug. This is rubbed upon the affected part twice a day. The temperature begins to fall at once, and the disease ceases to extend. The average duration of cases after the beginning of treatment is three to six days.

Oxygen for Cardiac Failure.— Dr. Hardy, in the *British Medical Journal*, reports success in the treatment of an obstinate case of chronic cardiac weakness, with frequently recurring attacks of intermission of the pulse, breathlessness upon the slightest exertion, and extreme prostration. The patient was made to inhale

the oxygen from a rubber bag two or three times daily. The intermissions of the pulse disappeared during the inhalation. The patient made a rapid recovery. Oxygen is certainly a rational remedy for such a case, and might well be substituted for the alcoholic mixtures which are commonly prescribed in this class of cases.

Treatment of Vaginal Gonorrhœa.— D'Aulnay recommends the following solution:—

R	Methylin blue,.....	10 grms. (2½ drs.)
	Alcohol,.....	15 grms. (4 drs.)
	Potass,.....	0.20 grms. (3 grs.)
	Aqua,.....	200 grms. (50 drs.)

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In using this lotion, the vagina may first be dried with absorbent cotton, then thoroughly cleansed with a 1-1000 solution of corrosive sublimate. The methylin blue solution should then be applied by means of one or two pledges of absorbent cotton moistened with the solution and placed behind the cervix, being held in place by a number of dry pledges. Care should be taken to obliterate all the folds of the vagina in cleansing it. The medicated pledges should be allowed to remain in position for two days, when they should be removed, a vaginal douche administered, and pledges saturated with glycerine introduced. At the end of two days the color produced by the methyl-blue will be removed. The vagina should be cleansed with a solution of corrosive sublimate, 1-1000, or a vaginal douche may be administered, employing an 8,000-10,000 solution. The pain disappears soon after the application of the methyl-blue solution is made. It is clear that this method is very successful.

New Mode of Tendon Suture.— Wm. Anderson, of London, a couple of years ago devised a new method of shortening a tendon, which is applicable to all cases, and enables one to shorten the tendon to the exact degree desired. His method consists in making a longitudinal slit in the tendon, then dividing one side at one end of the slit, and the other side at the opposite end. The limb is then placed in the required position, and the overlapping ends of the tendon united by suture.

Diet and Diabetes.—Herschfeld (*Deut. Med. Woch.*) calls attention to the fact that the prevalent belief that acetonuria is due to excessively rapid nitrogenous metabolism, is an error. He has found acetonuria in diabetics without increased nitrogenous metabolism. He has found by experiment that an exclusive meat-and-fat diet produces acetone in the urine, while the condition of carbo-hydrates (starch and sugar) hinders the formation of acetone. Morphia, opium, salicylate of soda, and alcohol had no effect, but glycerine had a decidedly favorable influence. The acetonuria of gastric cancer is of the same character as that found in diabetes.

Increase of Insanity.—The census reports of England, which have recently been published, show an increase of insanity of nearly 33 per cent in persons over forty-five years of age. This increase may be in part due to accumulation, but must be, in part, at least, attributable to actual increase in the number of cases of insanity as the result of the morbid conditions of life which prevail in civilized communities.

SECTION OF THE CERVICAL SYMPATHETIC NERVE IN IDIOPATHIC EPILEPSY.

BOGDANIK relates in *Wratch* a case in which he succeeded in curing idiopathic epilepsy by division of the cervical sympathetic. The division was made at the middle or thyroid ganglion, which was cut in two. The author was led to perform this operation by the opinion advanced by Alexander Baracz and Yaksch, that the ligature of the vertebral artery owes its occasional efficiency in the cure of this disease to an accidental injury of the sympathetic, occasioned by the operation. In a case operated upon by Bogdanik, the attacks disappeared entirely at the end of the third week, and had not returned at the time the report was made. Previous to the operation the patient had suffered for two years from daily epileptic seizures, which were not controlled by bromide of potash.

We have long held the opinion that idiopathic epilepsy is due to a functional

disturbance of the sympathetic, having been led to this conclusion by the observation that in these cases there is always great hyperesthesia of the abdominal sympathetic and marked disturbance of the digestion. We have confirmed, in numerous instances, Bouchard's observation, that the stomach is dilated in a large proportion of cases. Various dyspeptic symptoms are commonly present, particularly a voracious appetite. Our theory of the disease is, that, in many cases at least, the disturbance of the sympathetic is due to a toxic agent of some sort developed within the body. In a case under our observation some time ago, a young woman suffering from frequent occurrences of the epileptic state, when the patient was just recovering we found an enormous increase of the urinary toxicity. We injected into the veins of an animal the urine of this patient, and produced a genuine epileptic seizure. The phenomenon was so characteristic as to be truly startling.

If the cause of the disturbance of the sympathetic is the development in the alimentary canal, or elsewhere in the body, of toxines of an abnormal character, or of normal toxic substances in abnormal quantities, division of the sympathetic may possibly afford relief by rendering impossible the manifestation of the toxic agent through this mechanism. It is evident, however, that a radical cure should be sought for, not in the division of the sympathetic, but in the suppression of the toxic agents to which the irritation of the nerves may be due. This subject is one of great interest, and it is hoped that further light will be thrown upon it. It would certainly be unwise to resort to the proposed method of curing this disease without further investigation as to its real and permanent value.

**New Method of Detecting Tuber-
cle Bacilli.**—Dr. Kauffmann, of Cairo, prepares the specimen of sputum in the usual way; he stains in warm carbolfuchsin, then passes the cover-glass to and fro through water at or near the boiling point until but a faint rosy tinge remains. One or two minutes are usually sufficient. The preparation is ready for examination with a microscope at once.

BACTERIOLOGICAL NOTES.

[THE notes appearing in this department are abstracts or translations prepared expressly for MODERN MEDICINE AND BACTERIOLOGICAL REVIEW, from original sources.]

THE INFLUENCE OF OZONE UPON BACTERIA.

In the November number of the *Annales de l'Institute Pasteur*, Dr. Christmas has published an excellent resumé of what has been heretofore done in the investigation of the relation of ozone to bacteria, and gives an account of some recent investigations which he has himself made, which give important light upon this subject. Schoenbein, observing that ozone was extremely irritating to the air passages, even in very small quantities, and observing, further, that ozone was often increased in quantity, as shown by meteorological observations, during the prevalence of epidemics of influenza and pneumonia, advanced the theory that this gas was responsible for these disorders. Scoutetten found that decomposing meat lost its odor in an atmosphere charged with ozone. Clemens found that frogs died in water which was allowed to become putrid, but remained alive when the water was purified by a current of ozone. Sonntag experimented for the purpose of determining the influence of ozone upon bacteria, and came to the conclusion that it has no antiseptic value whatever. Sonntag, however, neglected to study the influence of ozone upon the spores of micro-organisms. Christmas has made a more complete investigation of this subject, and with quite different results, which he states as follows:—

"In order to observe the influence of ozone upon the development of a culture of microbes, it is sufficient to place tubes which have been freshly inoculated, in an atmosphere containing a certain amount of ozone, and at a proper temperature. Not only will there be no development, but the germs sown will be found dead after a sufficiently prolonged exposure, for if withdrawn from the ozonized atmosphere, and placed in an incubating oven, no development occurs."

The experiments detailed by Dr. Christmas sustained the above statement.

It was found that the bacillus of charbon was invariably killed in ninety-six hours, the cultures being made, as we understand, on gelatin.

The spores of bacillus subtilis, which easily resisted a temperature of 212° for two hours, were killed in eight to ten days. When exposed to the ozonized atmosphere in a tube of bouillon, they were not affected even after fifteen days. It was found that one tenth of one per cent of ozone was sufficient to arrest the development of germs upon the surface of objects placed in the ozonized atmosphere. A smaller proportion of ozone than this showed no antiseptic effects. An atmosphere containing .5 milligrams. (one part to two thousand) which possessed a strong odor of ozone, and could be inspired only with difficulty, had no influence upon either the development or the virulence of a gelatin culture of micro-organisms. Foods, such as milk and fruits, placed in the same atmosphere, were found to undergo decomposition as readily as in ordinary air.

The conclusion drawn from these experiments, is, that while ozone possesses a certain disinfectant value when present in the air in large quantity, this property is lost when the proportion falls below .05 per cent, which is equivalent to saying that it is useless as a practical disinfectant for dwellings, sick rooms, etc. The practical difficulties in the way of obtaining a sufficient quantity of ozone to insure thorough disinfection, are not only insurmountable, but an atmosphere charged with ozone becomes irrespirable long before the degree of saturation required for antiseptic purposes is reached. All apparatus, ozonizers, etc., which have been invented for the use of this agent, are useless.

Tuberculin Abandoned.—At a recent meeting of a German medical society, in discussing a paper in which the writer advocated the use of tuberculin in cases of consumption, Ewald stated that both experimentally and clinically tuberculin had been proven to possess no specific action, and that its use had been discarded on account of the dangers associated with it. He referred, for proof of his statement, to Pfuhl's experiments.

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REVIVAL OF THE OPERATION OF SHORTENING THE ROUND LIGAMENTS.

THE constant appearance in the medical journals, especially in the French and other European journals, of articles detailing some new method of performing the operation of shortening the round ligaments, clearly shows that practical surgeons are not willing to abandon this procedure, first suggested by Dr. Alexander, of Liverpool, notwithstanding the great outcry raised against it in consequence of its alleged inefficiency. Having first undertaken this operation nearly eight years ago, and having, since that time, employed it in three or four hundred cases, and with most gratifying success, we have been convinced that the objections offered against it have been due, not to inherent faults in the operation itself, but to a faulty method of performing it. In a number of papers we have described a method which we have found entirely satisfactory, the most important points of which are the following :—

1. The making of a very small incision, puncturing, merely, instead of laying open the roof of the inguinal canal, drawing out the ligament as far as possible, and stripping off the peritoneum and other tissues adherent to it until a thick portion of the ligament is reached which affords good anchorage for holding sutures, and—

2. The securing of the ligament by weaving it into the tendon of the external oblique in a line extending inward at

right angles to the inguinal canal also including it in the sutures which close the wound.

Performed in this manner, the operation can be completed in from three to five minutes on each side, and proves successful in suitable cases in fully ninety-five per cent of all cases operated upon. It should be remembered, however, that the operation is suited only to cases of prolapse and of retroflexion in which the flexion can be completely reduced.

We are led to make these remarks by an article which recently appeared in *Archives für Gynecology*, by Dr. Otto Lanz, in which a claim is made for the efficiency of the operation, provided it is performed by a method attributed to Kocher. By this method, an extensive incision is made, reaching from the anterior superior spine of the crest of the ileum to the external inguinal ring. The inguinal canal is laid open its whole length, the ligament is drawn out as far as possible, secured by a suture, and cut off. The success of this method consists not in the making of a long incision, as the author supposes, but in the drawing out of the ligament to its fullest extent. As Dr. Lanz maintains, the ligaments should be shortened at least four inches. Our mode is to shorten the ligaments four to five inches. In exceptional cases we have shortened the ligaments to the extent of six and seven inches. But we do not cut off the ligament, as does Kocher. This is entirely unnecessary. When the ligament has been carefully handled, and has not been long exposed, it readily enters into structural union with the tissues in which it is imbedded, thus forming an exceedingly solid anchorage. In one instance, we had an opportunity to verify this fact by careful dissection, in a case upon which we had operated two years previously. The tissues of the ligament were still as distinct and characteristic as at the time of the operation, although firmly imbedded in the tissues.

RELATION OF DISEASES OF THE PELVIC VISCERA TO CEREBRO-SPINAL DISEASES IN WOMEN.

WE believe that a widespread misapprehension prevails in relation to the influence upon the brain and general nervous system of diseases of the pelvic viscera in women. The writer has met a great number of cases in which profound nervous disturbances, which have been variously denominated neurasthenia, nervous exhaustion, cerebral anæmia, spinal irritation, "threatened paralysis," hyperæsthesia, paræsthesia, and beginning locomotor ataxia, had been ascribed to an anteflexion or an anteverision, to a retroversion, a congested ovary, a slight laceration of the cervix, or even a slight tear of the perineum. In a very large proportion of these cases the patient has been restored to health without giving more than what might be termed incidental attention to the pelvic disorder. There are plenty of cases on record in which women who had been for years the victims of neuroses of varied character, and had sought relief in vain from a whole procession of neurologists, gynecologists, and physicians of various specialties and various schools, have made excellent recoveries as the result of spending a summer upon the Alps or Rocky Mountains, camping out by the border of some lake, and rowing a boat from one to ten miles every day, or from being compelled, through reverses of fortune, to do their own housework, washing and ironing included. We have met a few cases of this sort, and a consideration of these cases many years ago led us to the conclusion that there must be something more fundamentally related to the patient's general conditions than the slight lesions discoverable in the pelvis.

A careful study of the static relations of the internal viscera, and the relation of the position of these viscera to bodily

symmetry and muscular development, led us a number of years ago to the discovery that in the great majority of these cases, the principal disorder from which the patient is suffering is not that presented by the pelvic viscera, nor that which would be naturally deduced from the long category of nervous symptoms from which the patient has been suffering, and which give rise to nearly all of the nervous and morbid manifestations observed in these cases, but it is to be found in the displacement of the abdominal viscera. The weak abdominal muscles, unable to sustain the viscera in position, allow them to drop down out of place. Prolapsed bowels, movable or floating kidney, depressed liver, displaced spleen, are all conditions which are met with very frequently, in fact some one or more of these morbid conditions are found to be present in the great majority of cases requiring gynecological treatment. This fact we believe we were the first to point out in a paper read before the Gynecological Section of the American Medical Association held at Washington a few years ago, and in a paper previously presented to the American Association of Obstetricians and Gynecologists, and published in the transactions of the Association for the year 1890.

If physicians would give more attention to the investigation of the static relations of the abdominal viscera, they would find abundant cause for the symptoms of which their patients complain, without attaching, only in very exceptional cases, such extraordinary importance to the minor lesions of the pelvic viscera, the influence of which in the production of general nervous disorders, we believe to have been enormously exaggerated. The cause of a great share of the symptoms from which neurotic women complain, is a disturbance of the great sympathetic, through which nutritive and vasomotor derangements occur in various parts of the body, setting up a multitudinous

variety of functional disturbances, and giving rise to an almost infinite number of symptoms. There is no cause which operates more effectively in irritating and provoking morbid reflexes starting from the sympathetic, than prolapsed and pendant abdominal viscera, which, by dragging upon the great sympathetic centers from which the nerve branches which they receive are given off, provoke a chronic congestion and irritation, the influence of which is transmitted through the pneumogastric and other connecting nerves, to the brain and other portions of the central nervous system. Gynecological surgeons often removed slightly diseased appendages with the expectation to afford relief from general neurotic disturbances which are not infrequently aggravated rather than cured, and which might have been entirely cured by the adoption of proper measures for the mental reform of the patient and the restoration of the normal physical balance. The same is true respecting other less violent remedial measures. The question of the static relations of the abdominal and pelvic viscera and the evils which grow out of the disturbance of these relations, is one which has been studied with great profit and interest by Glenard, Trasteur, Dujardin-Beaumetz, and other eminent French physicians, and which ought to receive more attention in English medical literature.

THE WARM BATH.

WHEN a student at Vienna, under Hebra, many years ago, the writer was quite startled to find a man who had been living in a bath-tub for more than a year. There were, in the hospital, several cases in which the bath had been prolonged to the extent of three months or more. This method of treatment had been found of immense value in the management of extensive burns, in cases of pemphigus, and some other forms of

skin disease. More recently, it has been suggested to employ the same measure in the treatment of various other maladies. Hueter recommends prolonged immersion, either of the whole body or of an arm or leg, as the case may require, in chronic rheumatic disorders, particularly in chronic polyarthritis, synovitis, and in poly-panarthritis, claiming that the permanent bath gives better results in these disorders than all other remedies. Riess recommends the permanent warm bath in both articular and muscular rheumatism.

Some years ago a method of treating rheumatism was introduced into the Belleyue Hospital, which was essentially the same in character as a permanent bath, and was found to be remarkably successful. The treatment consisted in wrapping the patient in woolen blankets wrung out of hot water, and renewing the application sufficiently often to maintain the heat to a proper degree. The blanket pack thus applied was often continued for two or three days, with the effect that the disease was in most cases brought to a speedy termination.

Riess employs the permanent bath by spreading the bath sheet over an ordinary bath tub in such a way as to allow the sheet to hang down into the tub like a hammock. The patient lies upon the sheet submerged in water, his head supported by an inflated rubber ring.

The idea of a permanent bath seems not to have originated with Europeans. There is to be found in Kawanaka, in Dzooshin, an Indian watering place in which it is customary for the patients to remain in water for weeks at a time. The proprietor of this establishment, a man of more than threescore years and ten, spends the whole winter in the water, and thus finds himself perfectly comfortable without maintaining the expense of a fire, and without garments, although for several months the ground is covered with snow. The bathing arrangements at this

place are similar to those at Leukerbad. The patients all enter one large basin, which is surrounded with a narrow wooden rim. Upon this rim the bathers rest their necks, while the body, lying submerged in the water, is kept beneath the surface by a large stone placed upon the loins. Dr. Baelz, who describes this bath, declares that no ill effects were noticeable.

Dr. A. Rose, of New York, to whom we are indebted for several of the above facts, recently reported a case in which chronic rheumatism of the elbow joints, which had resisted for several months all therapeutic measures, including plaster-of-Paris bandages, and various external and internal remedies, was practically cured in ten days by complete submersion of the arm in water during the day, the parts being covered with moist compresses and flannel bandages during the night. There is doubtless a large field for the use of the prolonged warm bath. Winternitz has shown that in the parts which are submerged in water there are greater deviations in volume corresponding to each heart beat, than in the same part when not submerged. This demonstrates that an increased amount of blood passes through the submerged parts.

The warm bath also produces a calming effect upon the nervous system by raising the temperature of the skin, which is ordinarily from ten to twenty degrees below the internal temperature. In a warm bath, which is usually taken at a temperature of 95° to 97°, the temperature of the skin rises until it is commonly not more than one or two degrees below the internal temperature. Napoleon, while at St. Helena, found relief from the pains resulting from his cancerous disease, by spending many hours, and sometimes whole days, in the warm bath. Napoleon had found the value of the hot bath while a soldier. It was his custom to refresh himself with a hot bath on the evening after a battle, by which means he was enabled to resume the march instead

of taking a rest, and thus was prepared to surprise his enemies and renew the battle.

The hot bath increases tissue change and the production of urea, is found to be stimulating, and at the same time lessens nerve irritation. It is a most valuable means of removing the effects of exhaustion.

CATHETERIZATION OF THE FALLOPIAN TUBES.

THE injection of peroxide of hydrogen and other medicated solutions, by means of a catheter introduced into the Fallopian tube for the relief of catarrhal conditions of this organ, has recently been recommended by several writers, but no very brilliant results from the use of this measure of treatment have been thus far reported. The method seems to us to be inadvisable, since it involves so great a risk of introducing infectious material into the peritoneal cavity. What gynecologists, as well as practitioners in other branches of medicine, need most of all, is less faith in specific therapeutics and less want of faith in nature. The removal of the predisposing or exciting cause is the thing which needs most of all to be accomplished in cases of catarrh of the Fallopian tubes, as well as in most other morbid conditions of the pelvic viscera.

These catarrhal conditions are due, in a great number of cases, to a general prolapse of the abdominal viscera, the result of a relaxed condition of the abdominal muscles, and consequently a decrease of the intra-abdominal tension, and, as a result, general passive congestion of all the abdominal and pelvic viscera. Chronic catarrh means not a chronic inflammation, but a chronic congestion. Relief of this congestion will almost certainly result in the relief of the catarrhal condition through the operation of the *vis medicatrix naturæ*.

When a patient gets well, it is not the remedies which the physician has administered that cure him, but the operation of the natural forces within his body. The thing which the sick man or the sick woman needs, is not so much the application of external or internal medicinal or other remedial agents, but the removal of the causes which have made him sick, and a fair chance for the *vis medicatrix naturæ* to do its work. The wisest physician is he who knows best how to discover the causes of diseases and morbid conditions, and who possesses the greatest skill in the removal of the same.

It is often possible, by various local applications, to temporarily relieve or cure catarrhal conditions of any portion of the genito-urinary tract; but cures of this sort are usually temporary, since they do not reach the root of the evil. A removal of the causes strikes deeper, and ensures permanent relief, and often without the aid of topical means. Nevertheless, when both classes of measures can be employed, it is, of course, preferable to do so, since thereby the most rapid results may be obtained.

HOW NOT TO CATCH CONSUMPTION.

THIS is a question which is getting to be of great practical interest. The developments of bacteriology have proven conclusively that tuberculosis is a contagious malady, and the great prevalence of the disease among civilized people, together with the statistical fact that one fourth to one seventh of all who die, die of this malady, while a much larger proportion of persons, as indicated by the recent investigations, suffer more or less from the ravages of the disease, places forcibly before us the fact that every person must be more or less exposed to the specific cause of this malady. It is impossible to escape the inhalation of tubercle bacilli or other spores without iso-

lating one's self upon an ocean island or some other locality remote from civilized people.

Dr. Kanthack (*Medical Magazine*) calls attention to the fact that the most important problem to be considered, is not how to escape the specific cause of consumption, but how to remove the predisposing causes by means of which conditions are established which favor the development of the microbe.

"In this relation the knowledge we possess regarding the behavior of certain animals to anthrax infection, is of considerable interest. Pigeons, usually resistant to anthrax, are rendered susceptible by starvation; dogs, hens, pigeons, and frogs, under conditions of enforced thirst; a predisposition to it is established in some animals by continued over-exertion and fatigue, by loss of blood, and by unsuitable diet. Guinea-pigs and white mice, which are resistant to avian tuberculosis, can be easily infected on being kept for a time in a warm chamber at 33° to 35° C. What changes are produced by these disturbances of their normal mode of life, we do not know; we only know that while before we interfered, the animal was insusceptible, afterward it was easily infected. The war against tuberculosis, then, becomes a matter of sanitation rather than of disinfection and isolation; against the surroundings of the people rather than against a microbe which can only do harm when a predisposition is set up."

Effects of Wine and Tea upon Digestion.—The popular idea that tea, coffee, cocoa, wine, and other beverages commonly used at meals, promote digestion, has been clearly proven by reliable physiological experiments to be an error. According to J. W. Frazer and W. Roberts, all these substances interfere with digestion. Tea, coffee, and cocoa retard the digestion of proteids, although the action of coffee is somewhat less intense

than that of tea. The volatile oil as well as the tannic acid of tea, was found to have a retarding effect upon peptic digestion. It is well that this fact be known, as the idea has become prevalent that tea is harmless if the infusion is quickly made so as to obtain the volatile oil without so great a quantity of tannic acid as is dissolved by longer infusion. Wine also retards peptic digestion, as was clearly shown by W. Roberts. This effect of wine and other alcoholic liquors was so marked that Sir William Roberts concluded, as the result of his experiments, that wine and other alcoholic liquors are chiefly useful as a means of slowing down the too active digestion of the modern civilized man, thus acting as a safeguard against what he terms "a dangerous acceleration of nutrition." However much the digestion of the average Englishman may require slowing down, the average American certainly does not need to put breaks upon his digestive apparatus.

Both Roberts and Frazer also showed that the effect of wines and tea is inimical to salivary digestion. Tea, even in a very small quantity, completely paralyzed the ptyalin of the saliva, while wine promptly arrested salivary digestion. Salivary digestion was not formerly considered a matter of very great consequence, as it was supposed that the action of saliva upon the digestion of food was quickly suspended in the stomach by the secretion of hydrochloric acid; but the observations of Ewald and others, which have been confirmed by the writer in the chemical examination of more than eleven hundred stomach liquids, indicates that salivary digestion proceeds in a normal stomach so rapidly as to cause the complete disappearance of starch by the end of the first hour after digestion has begun. Many cases of intestinal dyspepsia are doubtless due to the failure of salivary and peptic digestions in the stomach.

The "Gold Cure" Trick.—Having not long since a patient under our professional care who had twice taken the Keeley cure for intemperance, we had an opportunity of obtaining some authentic information which may be of interest to those who have faith in this method, of whom we hope there are few among our readers.

The first visit of this patient he described as quite successful. He was given full permission to drink all the whisky he desired, but was requested to ask for it whenever he desired it. His appetite for liquor held out for a few days, but he soon found that whenever he took it he shortly afterward became very sick, and consequently soon acquired a disgust for it. At the end of a few weeks he returned home, but in a short time found himself as much a slave to liquor as ever, and he soon found that the old appetite was as strong as before.

Returning to the "cure," by request of his friends, his experience was not so successful as before. He took notice on his previous visit that the nausea and vomiting apparently induced by the liquor followed very quickly after he had received a hypodermic injection. He soon became convinced that this injection was of a different nature than that which he received on occasions when he did not ask for liquor, and that whenever he asked for liquor the injected fluid was taken from a different bottle than at other times. He accordingly declined to take the "dope," as it was called, and found that he was able to drink as much liquor as he pleased and without any other than ordinary effect.

According to the statements of a physician who was for some time connected with one of these institutions, the so-called "dope" is simply a solution of apomorphia, a most powerful emetic.

The nature of the trick played by these men on their patients is very apparent. Whenever the patient asks for whisky, they

give him whisky, but with it give a dose of apomorphia; the patient believes it is the whisky which makes him sick, and as long as he carries this idea in his mind, he will not take it. It is evident that the so-called "cure" produced by these methods is simply a mind cure, and is no more effective than mental impressions made in any other way. Hypnotism and various other modes of making mental impressions have been employed for the cure of inebriety, and with a considerable degree of success, but success attained in this way is necessarily uncertain and temporary. The only means of permanently curing an inebriate is to restore his mental and nervous equilibrium and reinforce his will.

Effects of Tobacco on Physical Development at Yale and Amherst.—Statistics on this controverted subject are rare (*Med. Rec.*). The following remarks are by Dr. Jay W. Seaver, of Yale, a reliable authority. They are based upon observations made of a college class of 187 men during their first and final years. The growth of the men in four of the principal anthropometrical items, of varied character, is as follows:—

	Weight Pounds.	Height Inches.	Chest Girth Inches.	Lung Capacity Cu. In.
Non-users	11.87	.894	1.74	21.6
Irregular Users	11.87	.788	1.43	14.45
Habitual Users	10.66	.721	1.276	12.17

If this growth be expressed in the form of percentage, it will be seen that in weight the non-user increased 10.4 per cent more than the regular user, and 6.6 per cent more than the occasional user. In the growth of height the non-user increased 25 per cent more than the regular user, and 14 per cent more than the occasional user. In the growth of chest girth, the non-user has an advantage over the regular user of 26.7 per cent, and over the occasional user of 22 per cent. But in capacity of lungs the growth is in favor of the non-user by 77.5 per cent when compared with the

regular user, and 49.5 per cent when compared with the occasional user.

It has long been recognized by the ablest medical authorities that the use of tobacco is injurious to the respiratory tract, but the extent of its influence in checking growth in this and other directions, has, we believe, been widely underestimated. Dr. Seaver's conclusions in regard to the dwarfing effect of tobacco are fully corroborated by the following statement by Prof. Hitchcock, M. D., of Amherst College, more recently published:—

"The matter of tobacco smoking as an influence upon the physical development of Amherst students has been studied in the history of the class of '91. Of this class 75 per cent have increased in their measurements and tests during the whole course, while 29 per cent have remained stationary or fallen off. In separating the smokers from the non-smokers, it appears that in the item of weight the non-smokers have increased 24 per cent more than the smokers; in height they have surpassed them 37 per cent; and in the chest girth, 42 per cent. And in the lung capacity there is a difference of 8.36 cubic inches (this is about 75 per cent) in favor of the non-smokers, which is three per cent of the total lung capacity of the class."

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—Several years ago, attention was called by Gallivardin to the fact that suppuration and consequent pitting did not occur in smallpox if solar light is absolutely excluded. This method of treating smallpox was first suggested by John of Gaddesden. Gallivardin has recently reported in the Lyon *Medical Journal* the results of his experience with this method for the last seventeen years, and asserts that if the light is perfectly excluded and the treatment faithfully carried out, there is no suppuration, and hence no pitting of the skin.

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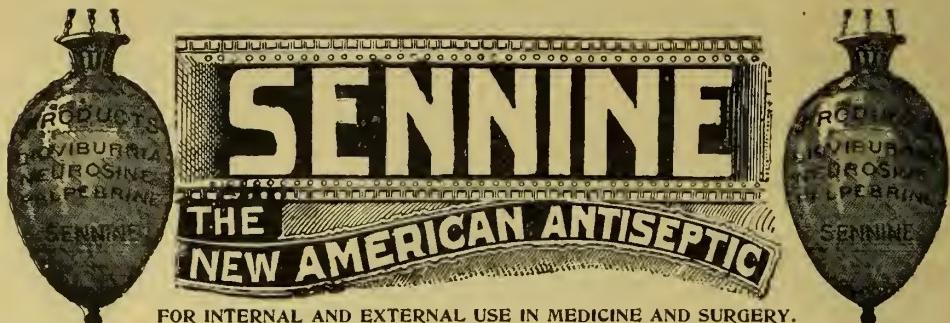
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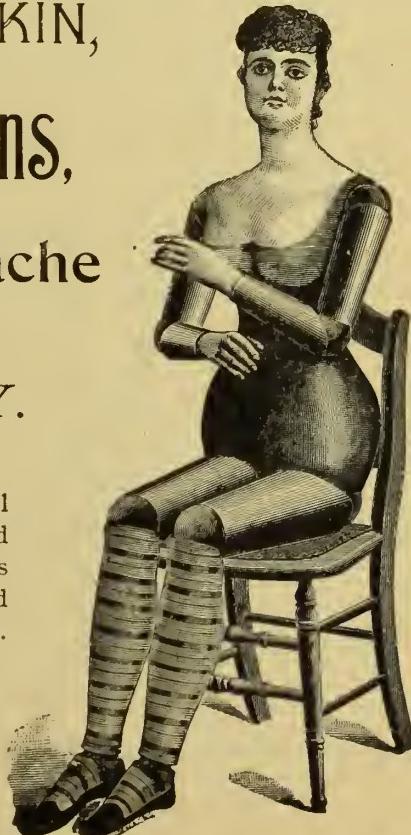
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Specimen page from Encyclopedia of Medicine and Surgery.

186

BANDAGING.

limb—single, double, or split—serves to retain rectal dressings, with the advantage that the split tails may come up on each side of the scrotum.

(6) *The four-tailed bandage* is used in fracture of the lower jaw.

(7) *The many-tailed bandage* (or bandage of Scultetus), consists of a central strip or backbone of bandage, to

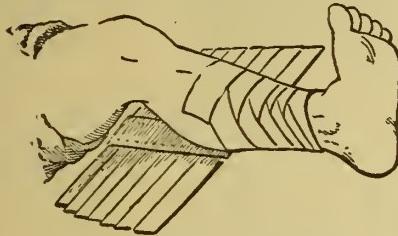
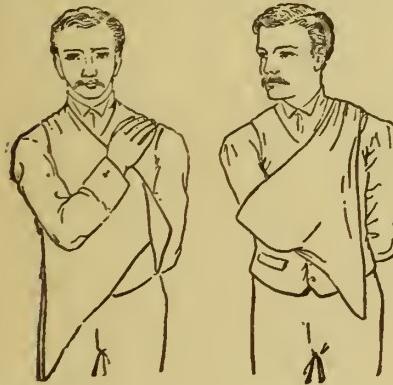


FIG. 31.—Many-Tailed Bandage.

which some eighteen shorter imbricated strips (Fig. 31) are stitched at right angles. The limb is laid on the bandage so that its axis corresponds with the central strip and, beginning at the periphery, the strips are gently and firmly folded over as seen in the diagram. A pin at each side, securing the two last strips to their predecessors, serves to fasten all safely. By taking out the pins,

FIGS. 32 and 33.—Triangular Handkerchief supporting the Elbow, *a* and *b*.

and flinging the tails right and left, the whole bandage is readily taken down, and a fresh dressing having been applied, the strips may once more be folded over so that the limb need not be disturbed in

the least. For burns and painful wounds, such a bandage is to be commended.

(8) *The triangular handkerchief*.—The use of slings, in place of the bandage, has been revived in recent years. Esmarch, of Kiel, has especially drawn attention to their use in military surgery. The handkerchief possesses many advantages. It can be speedily and easily applied. It is available for many varied purposes, and is readily washed. In using the sling, the base of the triangle

FIG. 34.—Triangular Handkerchief supporting the Elbow, *c*.

should always be applied to the part which requires support. Thus we see in Figs. 33 and 34, the elbow and wrist suspended. The loose end may be tucked up, and for neatness secured with a safety-pin; but on no account should the pin bear any weight—that is all borne by the longer ends of the handkerchief, which should be tied in a reef-knot.

Fig. 39 shows the sling adapted to retain dressings on the head. In a similar way, we may cover in the hand or foot. With one handkerchief rolled as a cravat, and applied so as to give a fixed point, a second may serve to secure a dressing, as in Figs. 37 and 38, where the shoulder and hip are seen covered in. Such examples may suffice.

(9) *The square handkerchief*.—A good head-dressing may be formed from a

Specimen page from System of Obstetrics.

Mechanism of Accouchement.—Foetal Phenomena. 207

so that the head is placed in the occipito-pubic position. Whether first to last, then, the head becomes occipito-pubic in issuing from the genital organs.

6. *Disengagement of the head.*—The head, generally aided by the accoucheur, is disengaged by a swinging movement, or by a hinge movement around the pubes, analogous to that of the vertex presentation, but the head being turned in the opposite direction there successively escape from the vulva, at the fourchette, the chin, the mouth, the nose, the eyes, and the forehead; after the passage of the frontal protuberances the head escapes brusquely.



FIG. 254.—Successive disengagement of the trunk (variety of the buttocks is here represented; disengagement is the same, with complete breech).

Mechanism in each position and in each variety of presentation.—
Position (complete breech).—L S I A has been taken as the type and described above.

R S I A.—The right buttock turns forward from left to right to be placed under the pubes. The rotation of the occiput is always made under the symphysis and disengagement is occipito-pubic.

L S I P.—The left buttock turns forward and from left to right.

R S I P.—The right thigh turns forward and from right to left.

Varieties of presentation.—The complete breech has been taken as the type of the mechanism. All that has been said applies to this variety.

Incomplete breech, variety of the buttocks.—The engagement in this variety often occurs during pregnancy. This precocity is due to the relative diminution of the foetal pelvis by the extension of the

Specimen page from System of Gynecology.*Ovarian Cysts.*

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the contiguous parts, and it is very difficult and sometimes impossible to enucleate them. Dermoid cysts have also been seen to lodge in the retro-peritonæal pelvic cellular tissue.

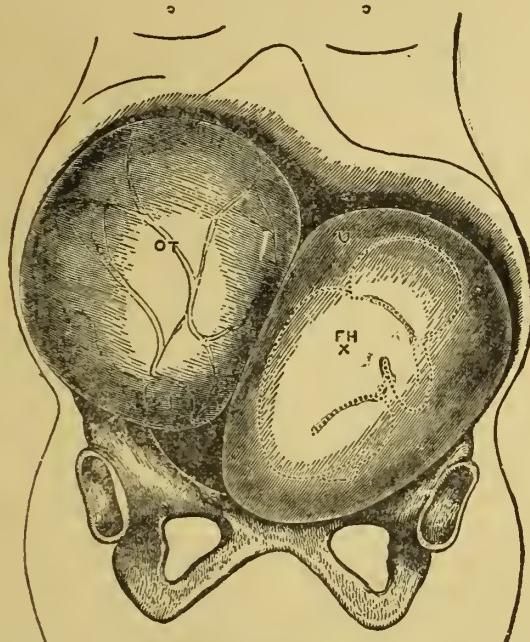


FIG. 241.—Cyst of the ovary complicating pregnancy. O T, cyst pushed out of the pelvis by the uterus; F H, center of auscultation of the foetal heart sounds.

Adhesions.—In the first stages of the development of cysts the cylindrical epithelium which covers them protects against the formation of adhesions (Waldeyer). But the desquamation of this covering permits, finally, the formation of adhesions under the influence of friction and external irritations. Loose and glutinous in the beginning, they become more and more fixed with time. The anterior surface of the cyst has been seen to be so intimately adherent to the peritonæum that operators have detached this structure from the abdominal walls for some distance under the belief that they were separating the cyst itself. The epiploic adhesions may be so extensive and so vascular that the cyst finds its principal source of nourishment in them. The intestine may be fused with the cyst wall so that a dissection may be impossible. Adhesions to the pelvic walls are especially grave on account of the danger of rupture of a ureter or of a large vessel; it is sometimes impossible to overcome them when they are very extensive. They are almost always distinct adhesions of a retro-peritonæal cyst without interposition of the serosa.

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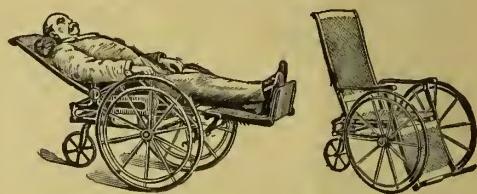
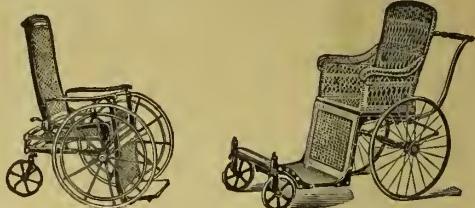
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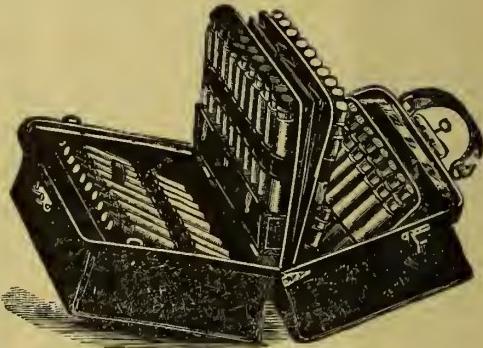
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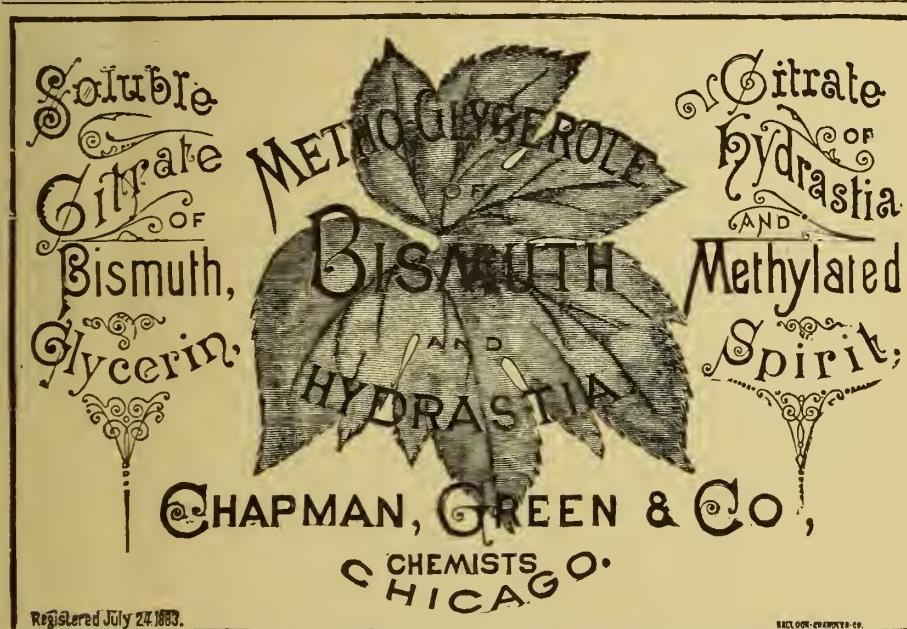
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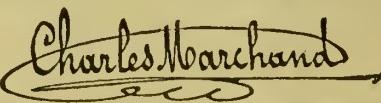
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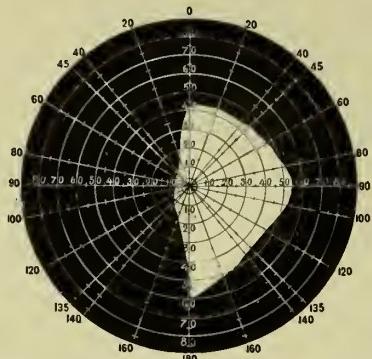


Fig. 1.—Field of Vision of Left Eye.

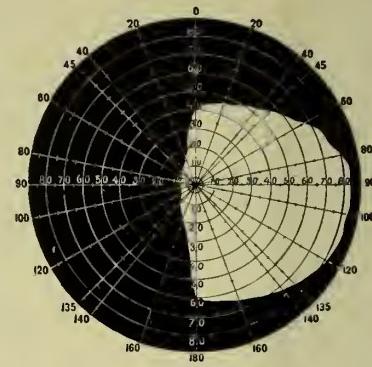


Fig. 2.—Field of Vision of Right Eye.

Outline of the Field of Vision in Case 2.—Left Homonous Hemianopsia.

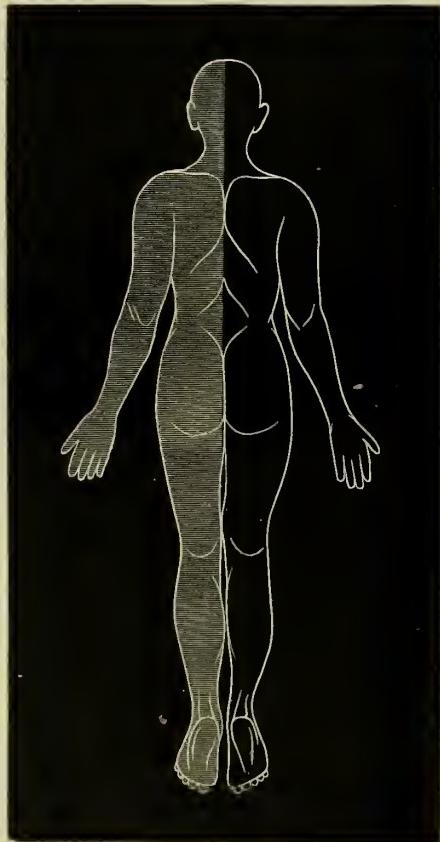


Fig. 3.

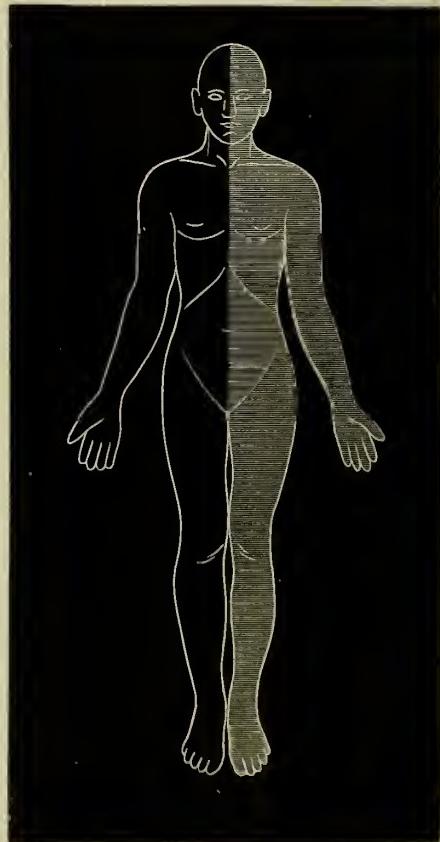


Fig. 4.

Diagrams illustrating Anæsthesia on Left Side of Body in Case 2. Loss of sensations is indicated by the light shading on the left of the median line in Figs. 3 and 4.
(See Dr. Riley's article on "The Voluntary Motor Mechanism.")

MODERN MEDICINE

• • AND • •

BACTERIOLOGICAL REVIEW.

VOL. III.

BATTLE CREEK, MICH., U. S. A., FEBRUARY, 1894.

NO. 2.

THE VOLUNTARY MOTOR MECHANISM AND SOME OF ITS DISEASES,—MOTOR PARALY- SIS, WITH ILLUSTRATIVE CASES.

BY W. H. RILEY, M. D.,

Sanitarium, Battle Creek, Mich.

Member of the American Neurological Association, etc.

(Continued.)

PARALYSIS CAUSED BY DISEASE AFFECTING THE UPPER SEGMENT OF THE MOTOR PATH.

CASE I.

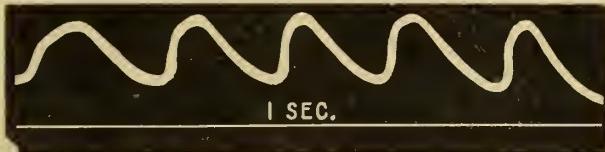
Diagnosis.—Sclerosis of the pyramidal tracts.

Male, age 40, occupation, civil engineer. The patient had had syphilis when a young man. Five years ago he was paralyzed in the right arm and leg. This paralysis continued up to about one year ago without much change. One year ago the weakness in the right arm and leg became worse, and at this time the left arm and leg were also paralyzed, and in a worse condition than the right arm and leg.

The patient came to the Sanitarium in a wheel chair, and for a time continued to travel about the institution in his chair. He could not bear the weight of his body on his feet. The strength of his arms was much below normal, and all his movements were weak. The reflexes, both deep and superficial, were very much exaggerated in both upper and lower extremities; ankle clonus was present in both legs. A tracing of the clonic movements, which occurred five times per second, is shown in the cut on this page. There were no changes in the electrical irritability of either muscle or nerve with the galvanic or faradic currents. Reflex movements could easily be developed by

applying the electric current to the skin. The tonicity of the muscles in both upper and lower extremities was very much increased, approaching a spastic condition. There was some paresthesia in the hands and feet, but there was no loss of sensation. The patient had been troubled with constipation for a period of nine years. He had no difficulty in retaining the urine or emptying the bladder.

The diagnosis made after examination was sclerosis of the pyramidal tracts, which probably affected them throughout the greater part of their course in the cord. After examination, a course of treatment was outlined, as indicated by the result of the examination. After con-



Tracing of Ankle Clonus.

tinuing this for one month, the patient was able to walk across his room with a cane. A month later his constipation was relieved, so that his bowels moved naturally daily without medicine or help. At the end of three months he was able to walk a half mile with a cane. At the end of four months he was able to exercise one hour daily upon his feet, and the strength in his arms had increased proportionately. The treatment was continued a few weeks longer, and he made constant and gradual improvement. When he left the institution, he exercised on his feet four hours daily, and walked without a cane. Besides this, he did considerable work in the gymnasium, which exercised the upper extremities and muscles of the trunk of the body. The strength of the muscles of the body was carefully measured at the beginning

and end of treatment by the mercurial dynamometer. A comparison of these two tests at the end of his treatment showed a gain of more than 100 per cent in the strength of the muscles of the lower extremities, which means much more when we keep in mind the fact that the legs were his weakest parts at the beginning of treatment, and that this weakness was due to organic changes in the spinal cord. There was also a similar gain in the strength of the arms. The patient left the institution delighted with his improvement.

CASE 2.

Diagnosis.—Left hemiplegia, left hemianesthesia, and left homonymous hemianopsia, probably due to thrombosis of the arteries in the posterior division of the internal capsule of the brain.

The patient is a man 55 years of age, five feet six inches in height, and weighs 150 pounds. He is a postal clerk by occupation. Fifteen years ago he had a stroke of paralysis, from which he completely recovered in about four weeks, with the exception of some numbness in the left side, which continued for some time later. One year before examination by me, he had *la grippe*. Following *la grippe* he noticed symptoms of numbness and coldness in the left foot, which soon extended up the body. Following closely these sensory symptoms, were motor symptoms of weakness in the same part of the body. The left arm was affected with weakness, and soon afterward the leg, and in a short time the whole of the left side was paralyzed. Along with the weakness there developed a spastic condition of the muscles. These symptoms had gradually increased to the time of his coming under my care. The patient also noticed, in walking on the street, that he could not see people when they passed him on the left side, until they got some distance in front of him. He also stated that he could see nothing in his left field of vision when looking directly forward.

Examination.—Patient walks with a cane; has a hemiplegic gait; carries his left arm flexed at the elbow, the hand flexed at the wrist, fingers also flexed in the hand. The muscles of the limbs on the left side are in a tense spastic condition; the tendon reflexes are greatly exaggerated; and the skin reflexes are very

much increased. The muscles respond normally to the faradic current. Reflex movements are developed in the limbs by the application of electricity to the skin on the left side of the body. The muscular power is very much diminished on the left side of the body. There are athetoid movements in the left hand and fingers. There is a complete loss of tactile and temperature sense on the left side. The patient cannot distinguish tactile or temperature impressions of any kind, when applied to the skin on the left side of the body. When heat is applied at certain temperatures, it produces a sensation of pain, but not of heat. This loss of sensation affects the whole of the left side of the body, and extends to the median line throughout the entire length of the body.

This is illustrated in Figs. 3 and 4, frontispiece, where the light shading on the left side represents a loss of sensation. An examination of the patient's vision by rough methods, shows complete blindness in the left field. A more complete examination was made with the perimeter, and the field of vision carefully outlined. This is shown in Figs. 1 and 2, frontispiece, where the white space represents the entire field of vision in each eye. The acuity of vision in the field was normal. Ophthalmoscopic examination showed no changes in the fundus of either eye.

The diagnosis made in this case was a lesion in the posterior part of the posterior division of the internal capsule, affecting the motor, sensory, and visual fibers. The nature of the lesion is probably that of a thrombosis of the arteries in this region, which was probably followed by some acute softening. In this particular region the motor, sensory, and visual fibers are closely adjacent, and a lesion that would affect one of these groups of fibers in this region would be very apt to affect the other two. In no other part of the nervous system could a single lesion produce these three classes of symptoms.

The patient remained under treatment about one month, and although not cured, was much improved. He was able to walk much better, and his general health was much better than it had been for some time previous. His field of vision remained about the same. There was some improvement in sensation on the

left side. The amount of improvement is not as great in this case as in most of the other cases here reported. In fact, this case is not reported as an illustration of what can be accomplished by treatment so much as to illustrate the peculiar combination of symptoms which may be present in this form of paralysis.

CASE 3.

Diagnosis.—Sclerosis of the pyramidal tracts of the spinal cord.

The patient is a lady aged 48 years. She came to the Sanitarium for treatment for paralysis of the lower limbs, and gave the following history: She has not enjoyed good health for several years. The present paralysis developed rather suddenly about four or five months ago. The initiatory symptoms were numbness and coldness in the hands and feet and legs; difficulty in emptying the bladder, accompanied with pain; dull, aching pains along the spine, across the hips, and in the legs. The patient also complained of a drawing up of the legs whenever brought in contact with her clothing. In a short time these symptoms were followed by paralysis of the lower limbs. The weakness in the lower limbs increased rapidly, and in a short time the patient was totally unable to walk at all, or to bear the weight of her body on her legs. She was obliged to take her bed, or go about in a wheel chair. These symptoms continued without any change for the better, until her arrival at the Sanitarium, some four or five months after the paralysis developed.

Examination showed an almost complete paralysis of the legs. The patient could not bear the weight of her body on her legs. The knee-jerk reflex was very much exaggerated in both legs. The skin reflexes were also much increased, and reflex movements in the legs were easily provoked by contact of the clothing with the skin. There was no change in the electrical irritability of nerve or muscle to either the galvanic or faradic currents. There was quite marked paresthesia in the hands and feet, but there was no loss of sensation. She had difficulty in emptying the bladder, and the bowels were obstinately constipated.

The patient was placed under treatment consisting of the application of heat and cold to the spine. A continuous current of electricity passed directly

through the spinal cord by the proper adjustment of the electrodes. Faradization of the muscles, and later a carefully graded course of exercise, adapted to her condition at the particular time, proper attention to diet, etc., made up the treatment. In one month's time, the patient was able to get about and walk some distance by the aid of crutches. In another month's time she was able to walk one half mile without crutches. Her treatment was continued, and two months later she said she felt as strong as ever, walked two or three miles daily without any fatigue. At the end of the treatment, a careful examination was again made of the strength of the muscles, testing them with the mercurial dynamometer. A comparison of the two strength tests of the muscles, one taken at the beginning of treatment and the other at dismissal from treatment, showed a gain of 270 per cent in the legs, which were entirely useless before beginning treatment. The patient also gained several pounds in weight, and went home after a course of five months' treatment, well and happy, and able to walk as easily as she did before being paralyzed.

(To be continued.)

THE RELATION OF RECENT BACTERIOLOGICAL STUDIES TO THE ETIOLOGY OF TYPHOID FEVER.*

BY JOHN H. KELLOGG, M. D.,
Battle Creek, Mich.

• (Concluded.)

I HAVE recently made some experiments in the investigation of an outbreak of typhoid fever, which seemed to have an interesting bearing upon this question, six cases of typhoid fever having occurred within a short period in families using water from a single well. The attending physician was led to bring a specimen of the water to my laboratory for investigation. My assistant at once injected a large white rat with 5 c.c. of the water. The animal for several days appeared as well as usual, but then showed signs of illness, and died of infection at the end of ten days. The post-mortem showed great enlargement of the spleen, and extensive intestinal lesions; the whole of the small intestine

*Presented at the Meeting of the American Public Health Association in Mexico, December, 1893.

was extremely friable, and its contents presented a yellowish color, which resembled very closely the appearance of potato cultures. The well of water which is believed to be the cause of the outbreak referred to, is surrounded with vaults and cesspools, four old deep vaults being located within a distance of thirty yards from the well. I am still pursuing the investigation with this water, which was first brought to my notice a few weeks ago, and shall make, at a later date, a more complete report of the results obtained.

I desire especially to report the results of experiments for the purpose of determining the comparative toxicity of bouillon cultures of the bacilli of normal feces, the bacilli of typhoid feces, and Eberth's bacillus. A quantity of bouillon was prepared in the usual way. Three hundred c.c. of bouillon was inoculated with 1 c.c. of a saturated filtered solution of normal feces. An equal quantity of the same preparation of bouillon was inoculated with 1 c.c. of a filtered solution of feces obtained from a typhoid fever patient in the latter part of the second week of the disease. A third portion of bouillon, of equal amount, was freely inoculated with a pure culture of Eberth's bacillus. The fourth portion of bouillon was preserved sterile. After growing the cultures for a few days at a temperature of 35° to 40° , the cultures were carefully filtered and neutralized, and their comparative toxicity determined by intra-venous injection of rabbits, with the following results:—

Experiment 1.—Material, sterile bouillon. A rabbit weighing 2.320 kilos, received 427 c.c. by intra-venous injection before death occurred. The principal symptoms were frequent and copious diuresis, watery diarrhoea, slight clonic spasms, slow respiration, slight dilation of the pupils, corneal insensibility, and exophthalmos. The amount of urine required to kill, per kilogram, was 186.5 c.c. The temperature of the rabbit at the beginning of the experiment was 39° C.; at death, 36.1° C., indicating a loss of 5,482 calories. The amount of heat communicated to the injected fluid was 7,728 calories, showing an actual gain of 2,246 in the number of calories produced, notwithstanding the great fall in temperature.

Experiment 2.—Material used, bouillon culture of normal feces. A rabbit weigh-

ing 1.650 kilos, received by intra-venous injection 29 c.c. of the filtered culture, when death occurred. The symptoms were as follows: At the end of 30 seconds, pupils contracting; at one minute, pupils strongly contracted; at two minutes, clonic spasms, slow respiration, micturition; at two minutes and 30 seconds, continuous clonic spasms, cornea insensible; at the end of three minutes, pupils dilated, violent trembling, and death. The amount of fluid required to kill a kilogram of rabbit in this case was 17.57 c.c. The temperature of the rabbit at the beginning of the experiment was 39° C., at the end of the experiment, 39.4° C., a gain of 528 calories. The amount of heat communicated to the injected liquid in this case was 620 calories, making a total gain of 1,148 calories.

Experiment 3.—Material, bouillon culture of typhoid feces. A rabbit weighing 1.540 kilos, received 20 c.c. of the filtered culture, when death occurred. The symptoms exhibited were, at the end of thirty seconds, slow respiration; at the end of one minute, contracted pupils; at two minutes, slight spasms; at three minutes, the pupils contracted, very strong clonic spasms, cornea insensible; at four minutes, death, pupils strongly contracted. Temperature, before injection, 38.6° C.; temperature at death, 39.1° C., showing a gain of 370 calories; injected fluid absorbed 422 calories, making a total gain of 792 calories.

Experiment 4.—Material, bouillon of Eberth's bacillus. A rabbit weighing 1.965 kilos, received 54 c.c. of the filtered culture, when death occurred, with the following symptoms: At the end of one minute the pupils were contracted to one half their usual size; at two minutes, pupils strongly contracted, slight exophthalmos, corneal sensibility diminished; at the end of three minutes, strong clonic spasms, and increased exophthalmos; death at the end of three minutes and thirty seconds. Temperature at the beginning, 39° C.; temperature at death, 39.4° C., a gain of .628 calories, to which should be added 1,155 calories, the amount of heat absorbed by the injected liquid, making a total gain of 1,783 calories.

A most conspicuous fact in the results obtained in the above described experiments is the highly toxic character of all the cultures, as compared with sterile

bouillon, the co-efficient of toxicity being 186.5 for sterile bouillon, 17.57 for the culture of normal feces, 13 for the culture of typhoid feces, and 27.5 for the culture of Eberth's bacillus. It will be noted also, that only two thirds as much fluid of the culture of normal feces was required to kill a kilogram of rabbit as with the culture of Eberth's bacillus, while the culture of typhoid feces exhibited a toxicity more than double that of Eberth's bacillus. These facts appear to agree entirely with those obtained by Vallet with a different method of experimentation; namely, they appear to indicate that, when grown under identical conditions, the three bacilli—the bacillus coli of normal feces, the bacillus of typhoid feces, and Eberth's bacillus—exhibit different degrees of activity, either as regards their rate of growth, or as regards the character of the toxic agents which they produce, the bacillus coli of typhoid feces exhibiting a distinctly higher degree of virulence or activity than the bacillus coli of normal feces, and both exhibiting a much higher degree of activity or virulence than does Eberth's bacillus,—another confirmation of the suggestion that Eberth's bacillus is really an attenuated form of the bacillus coli. Whatever results may have been noted by other observers, with this method of investigation, I do not know, as I have seen none reported, and I am yet unable to make any statement respecting the comparative toxicity of the cultures of microbes of different species; but this method of investigation, introduced by Bouchard as a means of studying the toxicity of the urine, appears to me to present a very important and interesting field of investigation. It is interesting to note that the physiological effects produced in the above experiments by the different cultures employed, were very similar in character.

The constant presence, in the body, of the bacillus coli, its increased virulence after a sojourn in vaults and cesspools, and its wide dispersion through the discharge of cesspools and sewers into lakes and rivers, gives great importance to this subject, even if it be considered not fully proven that the bacillus coli is capable of producing typhoid fever, since its significance as regards cholera nostras and cholera has been clearly indicated by Hueppe.

The use of water contaminated by human excreta, and hence containing bacillus coli, for drinking purposes, is certainly not the only means through which human beings are exposed to infection from this source. The dry-earth closet does not destroy the fecal matter which it receives, but preserves it in a form easily convertible into fine dust, which offers itself to every passing breeze for distribution and conveyance to various articles of food and drink, which may afterward be ingested by human beings.

The so-called dry-closet system, which has recently been introduced into some of the larger cities of the United States and Canada, offers peculiarly excellent facilities for the distribution of this dangerous microbe. The readiness with which it grows in such media as milk, renders the infection of dairy utensils by washing with contaminated water, an efficient means of inoculation. This may be one of the most common sources of diarrhoea and other disorders of the alimentary canal, so common in children fed upon cows' milk.

Another possible source of infection, to which the writer first called attention several years ago, when engaged in the study of this question as a member of the State Board of Health of Michigan, is inoculation of the milk during the process of milking, by dust and particles of excreta falling into the milk receptacles, from the body of the cow and other sources. That such contamination of milk does occur, is evidenced by the gleanings of the milk strainer, which in some form is in universal use for the purpose of removing the masses of impurity of the sort mentioned.

That these particles of bovine excreta may often contain the microbial elements of typhoid infection is a belief which the writer has long entertained, and published several years ago. Whether or not the bacillus of Eberth or the bacillus coli can survive passage through the alimentary canal of the cow, is a question which has not yet been settled by experimental evidence. A year or two ago I undertook some experiments for the purpose of settling this question. A calf was fed for a number of days upon milk which had previously been sterilized, then inoculated with Eberth's bacillus and other bacilli which had been sepa-

rated from water which had given rise to typhoid fever, and the toxic nature of which had been demonstrated experimentally by inoculation. The excreta of the calf were carefully collected, and were subjected to a critical bacteriological study by Prof. F. G. Novy, M.D., of the laboratory of hygiene of the University of Michigan. Eberth's bacilli were not identified, but bacilli so closely resembling those with which the milk had been inoculated as to warrant the supposition that they were merely modifications of the same, due to the influence of the medium of growth presented within the intestines of the animal, were discovered in considerable numbers. One of these, which closely resembled the bacillus coli in its mode of growth and general characteristics, was found in the discharges of the calf after taking the inoculated milk, but not in the excreta obtained before the beginning of the experiment.

I am at the present time conducting experiments in the laboratory of hygiene connected with the medical institution of which I have charge, and hope to be able to present more positive and satisfactory results upon this point in the near future. If the bacillus coli can survive transit through the alimentary canal of the cow, it is evident that safety for human beings can only be secured by providing for cows, at least when kept for milking, a water supply as free from contamination with excreta, as that provided for human consumption. Recent experimental evidence upon this question certainly gives considerable support to this theory.

In a recent number of the *Deut. Med. Woch.*, Prof. Gaffky mentions three cases of infectious enteritis which were traced to the use of milk contaminated by the dejections of a cow suffering from hemorrhagic enteritis. The patients were employés of the Institute of Hygiene of Giessen. All three were infected by the disease at the same time, after partaking of milk which had been brought to the laboratory in a closed bottle the day before. The symptoms, though varying in intensity, were essentially the same in character in all three of the cases, consisting at the beginning of the disease of headache, repeated chills, and malaise. In one of the cases, more severe than the others, there appeared later a high

fever, accompanied by stupor, coated tongue, abdominal tympanitis, with tenderness to pressure, frequent scanty stools of a dark brown color, and on the 11th day, an intestinal hemorrhage. The urine was albuminous and contained granulous cylinders and leucocytes, but no red blood corpuscles. Albumen was found in the urine until convalescence was established. The fever continued until the nineteenth day.

Careful bacteriological examination of the dejections of the three patients and the sick cow, enabled the observers to discover a small and very mobile bacillus, the cultures of which were found to be extremely virulent, producing, by inoculation, fatal results in mice and guinea-pigs.

The same bacilli were also found in the mucous membrane of the intestines of the cow. Neither the blood nor the milk of the cow, when withdrawn with antiseptic precautions, contained the microbe, showing that it must have found its way into the milk during the process of milking, through the media of particles of excreta falling into the vessel used to receive the milk.

CONCLUSIONS.

The facts and arguments presented seem to justify the following conclusions:—

1. The bacillus coli and the bacillus of Eberth are so nearly identical in their biological characters that none of the numerous methods proposed for distinguishing them can be relied upon as giving constant results.

2. The bacillus coli gives, in inoculation experiments, identical pathological effects with those produced by the bacillus of Eberth.

3. The bacillus coli acquires, by passing through the body of an animal, biological characters closely resembling those of Eberth's bacillus. The bacillus coli found in vaults is much more virulent than the bacillus coli of the intestines or Eberth's bacillus.

4. The bacillus coli is much more resistant than the bacillus of Eberth, and thrives in vaults, while the bacillus of Eberth quickly dies under the same conditions.

5. The study of epidemics and the bacteriological study of waters which have given rise to typhoid fever, lead to the

conclusion that the bacillus coli at least shares with the bacillus of Eberth the property of producing typhoid fever under certain circumstances, and that the bacillus of Eberth may be only a variety or modified form of bacillus coli.

6. The contamination of milk with the excreta of cows is a possible source of infection with the bacillus coli and with typhoid fever.

7. The same care ought to be observed in the protection of water used by cows kept for milking purposes from contamination with excreta, as for that used by human beings for drinking purposes.

8. Since vaults and cesspools constitute depots in which the comparatively innocuous bacillus coli acquires malignancy and virulence, rendering it highly destructive to human life, these convenient nuisances should be prohibited by law, and the destruction or disinfection by proper agents, or conveyance to a safe distance from human habitation, of all alvine discharges, should be compulsory as one of the most important means of conserving the public health.

A CASE OF VESICAL TUMOR.

BY J. H. KELLOGG, M. D.,

Supt. of the Sanitarium and Hospital, Battle Creek, Mich.

THE following case is reported as one of somewhat unusual interest, and worthy of being placed on record:—

The patient, Mr. D—, aged twenty-five, an electrotyper, had for some months suffered from serious bladder disturbance, the most prominent symptoms being pain, the discharge of considerable quantities of bloody mucus, shreds, and occasionally small calculi. His attending physician had succeeded in making him very comfortable by the careful employment of bladder douches, and the patient, whose health had been greatly impaired, had finally recovered sufficiently to be able to resume his occupation. His physician, however, suspected the existence of some more serious disorder than ordinary vesical catarrh, and at his request I made a systoscopic examination, and discovered, almost as soon as the instrument was introduced, a tumor somewhat larger than a good-sized English walnut, corrugated in appearance, and attached to the right vesical wall.

The next day (November 29) the bladder was opened by a super-pubic incision. The tumor was found to be attached to the right wall of the bladder by a narrow pedicle. The tumor was very vascular, and bled when touched. In order to keep the field of operation clear from blood, a quantity of gauze was introduced into the bladder and the tumor imbedded in it, so that the pedicle was easily brought into view beneath the opening into the bladder. Slipping the loop of my hemorrhoid snare over the tumor, I compressed the pedicle, and then separated the tumor by means of the Pacquetin cautery. Removing the tumor



and the gauze, the bladder was thoroughly washed out, a drainage tube inserted, and several sutures placed. Each day since the operation (three weeks ago), the bladder has been washed out, a strong current being forced up through the super-pubic opening, by means of a catheter introduced through the urethra. The tube was not retained after the first twenty-four hours. The tumor has gradually closed up, and the urine is now voided in the natural way. The patient is free from pain, and there is every reason to believe that he will make a good recovery.

The accompanying half-tone engraving represents the tumor as it now appears, after having been in alcohol for three weeks. It has contracted to about one fourth its volume when first removed.

SHORTENING THE ROUND LIGAMENTS VS. VENTRAL FIXATION IN RETROVERSION.

BY J. H. KELLOGG, M. D.,

Battle Creek, Mich.

A WRITER in the journal of the American Medical Association for April 15, 1893, commends ventral fixation of the uterus as preferable to the so-called Alexander's operation, or shortening of the round ligaments. His arguments, which seem to be a very fair presentation of all that can be said against the operation of shortening the round ligaments, and in favor of the operation of ventro-fixation, are thus summarized in the *Archives of Gynecology* for May:—

"In Alexander's operation it is often very difficult to find the ligaments, and after vain search the operation must be abandoned for ventral fixation. The ligaments may be so small that they will not stand the necessary tension for shortening, and the adhesions of the uterus are frequently so great that sufficient tension to draw up the uterus and stretch these adhesions cannot be produced without danger of rupturing the normal round ligament. In drawing the uterus up by the round ligaments, vascular adhesions hidden from view may be torn, and give rise to hemorrhage, which cannot be immediately detected, and result in pelvic hematocoele. It is often necessary to open the canal of Nuck in order to find the round ligament, and this procedure must be considered attended with nearly as much risk of life as opening the abdominal cavity by a median incision."

"In the Alexander operation the uterine adhesions are not destroyed, but merely stretched, and retain a degree of traction which tends ultimately to bring the uterus back into the retro-position. The exaggerated anterior position of the uterus after Alexander's operation is lower in the pelvis than after the operation by ventral fixation, causes more pressure on the bladder, and often produces vesical tenesmus with burning, stinging pain. Winckel's objection to Alexander's operation is that the chief cause of the retro-displacements, the relaxation of the retractors (vaginal ligaments), is not corrected. From these facts it is obvious that Alexander's operation is limited to

cases of retro-displacements that are easily reduced and without adhesions, in subjects possessing a round ligament of normal dimensions,—conditions which are not easily determined before.

"The advantages of ventral fixation over the Alexander method are, adhesions can be overcome under direct inspection, and the danger of hematocoele prevented. The uterus can surely be brought up and maintained in the anteverted position; the vaginal ligaments are tightened, depleted, and their tonicity rapidly restored. On account of the higher position of the uterus assumed in this method, there is more room for the distention of the bladder, and there is no complaint of burning, stinging pains, or dragging sensations. The objection to opening the abdominal cavity is to-day almost nothing, and although both operations have a rate of mortality, it is very low, and there is no preference on this account of one operation over the other.

"When pregnancy occurs after either operation, there is little danger of abortion, much less than in the displaced condition of the uterus; normal labor usually occurs at full term, and the subsequent health of the patient is good. There seems to be no difference in the value of these operations in this respect. Krug has operated successfully nearly fifty times; three of his patients afterward became pregnant, two were delivered at full term, and the other is doing well.

"The writer has operated six times with perfect success. In none of these cases has there been any rectal or bladder symptoms afterward, and in all there has been considerable diminution of the size of the uterus, and the sense of weight has been replaced by one of lightness and general well-being. The patients have been free from menstrual disorders, and were able to sit up at the end of three weeks, with one exception."

My purpose in quoting the above paragraphs is to place before our readers the other side of this question. When Dr. Alexander of Liverpool first brought forward his method of shortening the round ligaments by cutting down upon the ligament at the point where it issues from the inguinal canal, pulling it out, cutting it off, and stitching it to the tissues overlying the pubic bone, numerous opera-

tors of this and other countries, tried the procedure, but the results were generally so bad as to discourage almost every operator. If we recall the facts correctly, Munde reported three failures to find the ligament in his first six operations, when he practically abandoned the operation. Other operators had like success. Trenholme, of Montreal, reported two failures in three cases. In two of these cases it was necessary to perform subsequent operations for the relief of hernia following the operation upon the ligaments. Trenholme reported that, as the result of careful dissections on fifteen female cadavers, he was led to the conclusion that the round ligaments were absent in the women of Canada in one third of all cases. About the same time the Demonstrator of Anatomy in a leading Western college made careful dissections in twenty cases, and as the result, reported that in nearly half of these cases the round ligaments spread out upon the peritoneum lining the abdominal cavity at the internal ring, never entering the inguinal canal at all.

Eight years ago the writer of this article first undertook the performance of this operation, after making some studies of the ring and its relations to the inguinal canal in the dissecting room. The first operation was a very tedious one, occupying more than three hours, but both the ligaments were found, and the operation was successfully completed by the method as described by Dr. Alexander. After performing the operation a few times by the method described by Dr. Alexander, several modifications were made. Substantially the same method was followed, however, during the first two years, at the end of which time a radical change was made, when the present method, which we have elsewhere described, was adopted. We have now performed the operation of shortening the round ligaments over three hundred times, and feel that we have had sufficient experience with the operation to speak understandingly about it, having taken the pains to follow up the cases operated upon, and having had frequent opportunities to watch patients several years after they had been operated upon.

We will now consider each one of the arguments presented by the writer of

the paragraphs above quoted in favor of the operation of ventro-fixation, as opposed to the operation of shortening the round ligaments:—

1. "*It is difficult to find the ligaments, and after vain search the operation must be abandoned for ventral fixation.*"

Our reply is simply this: That the difficulty of finding the ligaments is generally due to no other cause whatever than want of skill on the part of the operator. In his earlier operations, the writer sometimes failed to find a ligament. I have failed to find the ligament upon one side in three cases, but I am compelled to confess that it was due to clumsiness and inexperience on my part, rather than to any other cause. The ligaments in these cases were very small, and were overlooked in consequence of lack of care in dissecting. The ligament is always present,—at least I have found it present in 397 out of 400 cases, which I think warrants me in saying that it is always present. The operation, to be uniformly successful, must be a bloodless one. The incision must be made at such a point as to avoid the vein which passes across and a little above the center of the canal and the artery which overlies the external ring. An incision one half an inch in length is ordinarily sufficient; it is very rare indeed that my incision exceeds three fourths of an inch. An incision one inch in length is ample *in any case*, unless the operation must be performed through several inches of fat, in which case a half inch more is required; but in no case is it necessary to make an incision more than from three to four centimeters in length. The recommendation of M. Chalot in the *Revue de Chirurgie*, to open the inguinal canal for fourteen centimeters, is simply monstrous. A mere puncture with a small scalpel large enough to admit a large-sized strabismus hook, is all the opening required into the inguinal canal.

We have often operated without seeing a single drop of blood. When the operation is made thus bloodless, the natural color of the tissues enables one to distinguish the ligament quickly, and even if it is very small, it can be readily picked out.

(To be continued.)

TRANSLATIONS AND ABSTRACTS

[THE articles in this department are prepared expressly for this journal.]

THE POISONS OF THE URINE.

BY PROF. A. CHARRIN, M. D.,
Physician to the Hospitals of Paris, Member of the Society
of Biology, and Director of the Laboratory
of General Pathology.

Translated by J. H. Kellogg, M. D.

(Continued)

Historical Review.—Segalas and Vauquelin placed the problem of the toxicity of the urine upon an experimental basis, a basis which has not been abandoned by Gaspard, Frerichs, or Claude Bernard. Always in relation to these researches, physicians as well as physiologists have been especially desirous to know to what substance the symptoms observed should be attributed. They have pursued the study of the renal secretion as a whole, concluding their researches with the phenomena produced by the entrance of the urine into the interior of the body. At different periods, urea has been charged with being the cause of these phenomena. Its abundance, and the ease with which this body may be isolated, have without doubt given rise to the attacks which have been directed against it; but notwithstanding the fact that it is the most accused and the most suspected of the toxic agents contained in the urine, it is, perhaps, the least culpable. Then, in their turn, various other substances have been successively accused, as carbonate of ammonia, odoriferous matters, especially the coloring matters, the extractive substances, water as a mechanical agent, oxalic acid, mineral salts, especially the potassic elements; and finally the alkaloids, tox-albumens, etc.

It should be mentioned that the urinary injections practiced by Muron in 1868, led him to declare these injections to be innocuous. This opinion is explained by an analysis of the method employed. The urine was slowly introduced into the subcutaneous cellular tissues. Elimination was thus effected as rapidly as absorption took place,—more quickly, in fact, in certain cases. The necessary consequence was that the system at no instant contained a toxic dose of the urine.

Quite contrary were the conclusions formulated by Feltz and Ritter in 1881. These investigators undertook a long series of experiments, and exhibited a remarkably logical spirit. They made not only subcutaneous, but also intra-venous injections, employing, as did Muron, normal urine, and reaching the conclusion that the toxic symptoms observed should be attributed to the potash alone.

In 1882, Bocci killed frogs, but failed with the rabbit and the guinea-pig.

Schiffer took up this study in 1883. Although employing the same animal, he did not confine himself to the study of the urinary secretion in mass, but employed one or several of the constituents of the urine. By this method one begins, for example, with the etherial extracts of the urine. It is necessary to employ 16 to 25 grams of the urine to obtain a sufficient amount of poison to kill a frog. In experiments upon a rabbit, it is necessary to increase the amount of urine to 1500 grams to produce death. According to these results, retaining the same relative proportions, it would be necessary for an amount of urine equal to the weight of the body to accumulate in the body, in order to produce fatal poisoning. These experiments show, however, that the urine contains elements which, in great quantities, are capable of producing toxic symptoms.

We owe to Lepine, Dupard, Guerin and his students, some interesting facts, but these authors have studied especially the urine of persons suffering from pneumonia and various other disorders; in other words, they have studied the pathology rather than the physiology of the urine. It is generally known that various morbid processes, especially infection, modify the constituents of the liquids which are eliminated by the kidneys. Experimentation, even more than chemistry, furnishes the absolute proof of this statement. In 1883, Prof. Bouchard took up again the study of the toxicity of the normal urine. He made a great number of experiments, adopting invariably a technique which we have personally followed. This technique requires some explanation, as we cannot ignore the part, often considerable, played by the *modus faciendi*.

Choice of Animal for Experimentation
—*The Rabbit.*—From the beginning to the end of these researches, the rabbit has been utilized. It is easy to handle;

its resistance, without being excessive, is sufficient; besides, the symptoms which it exhibits are sufficiently varied and clearly defined. But one of the great advantages offered by this laboratory subject is found in the anatomical disposition of its blood vessels. Upon the dorsal face of the pavilion of the ear, coursing along the posterior border, is a marginal vein easy to reach without the least preparatory denudation. A moderate amount of skill enables one to introduce into this vessel the sharp needle of a hypodermic syringe. Loss of blood is avoided, the shock of the operation is reduced to nothing, and the traumatism, which so often vitiates results, need not be counted.

Mechanical Effects of the Injections.—An objection which may present itself to the mind, is this: Among the various disturbances produced by these injections, is it not necessary to recognize the effects of the volume or mass of liquid introduced? To answer this question it is necessary to experiment, to observe, to interpret, and to conclude.

The Excipients; Water, Alcohol, Glycerine,—their Toxicity.—The intra-venous injection of distilled water is followed by death when we reach 90 c. c. per kilogram, and especially if we increase this dose, which some subjects support, to 120 or 130 c. c. It is evident that the mechanical effect of the liquid is not sufficient to account for the symptoms observed, since 40 to 70 c. c. of urine is sufficient to produce death.

Add to the pure water, five to seven parts of sulphate of soda, or one to three parts of chloride of sodium, to 1,000 parts of water; in other words, transform it into a sort of artificial serum; immediately the toxic power lowers, the symptoms are delayed, the destruction of the blood corpuscles is rendered more difficult. Sometimes one administers half a liter or more before the animal dies.

The same observation is made when certain urinary secretions are employed. The reason is the same. In such cases the kidneys transmit almost nothing but water, adding only minute quantities to mineral or other matters. This phenomenon is observed in the course of intestinal nephritis, or arterio-sclerosis. One is surprised in his first operations of this sort, to inject, without producing death, 300, 400, 500, 600 c. c.—considerable quantities it is true—into the circulation

of the living animal, the entire blood mass of which does not exceed 180 to 200 c. c.

The laboratory processes also require the use of alcohol and glycerine. This renders it necessary to measure their toxicity and their physiological effects. These two substances are ordinarily employed mixed with water. When employed in the pure state, absolute alcohol forms small coaguli,—little blood clots,—and thus gives rise to multiple emboli. On the other hand, when the alcohol is diluted, 20 to 100 of water, symptoms appear only when the dose reaches 1.45 c. c. per kilogram, becoming grave at 3.50 c. c., and very grave in the neighborhood of 4 c. c. The most dominant symptom is coma, a profound narcosis.

The limpid consistency of glycerine renders it necessary to dilute it one half. This dilution does not render it totally innocuous, for in doses exceeding 5 c. c. it provokes muscular tremor, and at 14 to 16 c. c. death results.

If circumstances require the use of one of the three substances in question, it is sufficient to recall the fact that the doses must be less than the smallest quantities indicated respectively for each of the substances named as marking the fatal dose.

Importance of the Method of Administration.—In researches of this sort it is important to discuss the choice of the method of administration. According as the poisons studied enter the system by the digestive canal, by the skin, by the circulation, by the air passages, by the peritoneum, etc., marked variations appear. Nothing, in fact, possesses greater power to influence the reactions of the system, their intensity, and their expression. A substance introduced into the blood current goes straight and quickly to the cells of the bulb, and to those of the hemispheres. But the first controls the cardiac action to the respiratory rhythm, while the second has charge of ideation. A substance which has been deposited in the subcutaneous tissue reaches these fatal centers, but more slowly and progressively. The shock will thus be less violent and less pronounced. The same is true in relation to the stomach. Then in addition, some combinations, decompositions, and chemical transformations may occur. The bronchi, under menace of asphyxiation, allow the introduction of only very small

volumes. The peritoneum and the serous membranes have their reflex actions, their inflammations.



FIG. 1.

But there is another thing to be considered. It is of the utmost importance, in experiments of this sort, to know the exact dose of the substance under examination, which is present in the blood at a given instant. How can this information be obtained, with the digestive mucous membrane which at the same time retains and transforms, or with the skin which at the same time eliminates and absorbs? The superiority of the intra-venous method, especially in all that pertains to acute symptoms, is placed beyond doubt.

(To be continued.)

NEW METHOD OF ARTIFICIAL RESPIRATION FOR THE NEWBORN.

DR. J. HARVIE DEW, of New York, described before the New York Academy of Medicine, a method of artificial respiration in cases of asphyxia in the newborn, a method which he has employed for more than twenty years, and which is strongly endorsed by Lusk, Grandin, and other eminent New York physicians. The following brief description, with the accompanying cuts, will make clear this new method, which impresses us as being superior to the methods generally employed:—

DESCRIPTION OF METHOD.

"My directions for its practice are: To grasp the infant with the left hand, allowing the neck to rise between the thumb and forefinger, the head falling far over backward, straightening the mouth with the larynx and trachea, thereby serving to raise and hold open the epiglottis (as demonstrated by Benjamin Howard in his excellent article, 'A New and Only Way of Raising the Epiglottis,' *British Medical Journal*, November, 1888). The upper portion of the back and scapulae rest in the palm of the hand, the other three fingers are inserted in the axilla of the baby's left arm, raising it upward and outward. (See Fig. 1.)

"Then with the right hand, if the baby is large and heavy, grasp the knees in such a way as to hold them with the right knee resting between the thumb and forefinger, the left between the fore and middle fingers. The position will allow the back of the thighs to rest in the palm of the operator's hand. If the infant is small and light, it will be found to be more convenient and easier to hold it in the same way by the ankles instead of the knees, allowing the calves instead of the thighs to rest in the palm of the hand.

"The next step is to depress the pelvis and lower extremities, so as to allow the



FIG. 2.

abdominal organs to drag the diaphragm downward, and with the left hand to gently bend the dorsal region of the

spine backward. This enlarges the thoracic cavity, and produces inspiration. (See Fig. 2.)

"Then to excite expiration, reverse the movement, bring the head, shoulders, and chest forward, closing the ribs upon each other, and at the same moment bring forward the thighs, resting them upon the abdomen.. This movement arches the lumbar region backward, and so bends the child upon itself as to crowd together the contents of the thoracic and abdominal cavities, resulting in a most complete and forcible expiration. (See Fig. 3.)

"While this movement is a powerful one, the operator can, by his manipulations, accomplish it without shock, and render it as gentle as he pleases."

Fig. 4 shows the method by which the mucus may be expelled from the throat, by elevating the buttocks and depressing the head and shoulders.

THE BISCUIT OF LEGUMINE AS A SUBSTITUTE FOR BREAD IN THE DIET OF INVALIDS.

BY DR. BOVET.

Translated from the *Bulletin General de Therapeutique*.

[IN a previous communication, Dr. Bovet had maintained that bread, wine, and fats constitute a pernicious trio in

the digestive tube and liver, and, without doubt, also other organs, must consist in carefully regulating—



FIG. 4.

1. The food, giving that which is suited to each particular case, its quantity per diem, its quality, the mode of its preparation,—in short, that which each patient should eat, and that which he should not eat.

2. Various other matters pertaining to personal hygiene, such as gymnastics, sleep, baths, friction, massage, hydrotherapy, electrization, etc.

Among the articles which must be forbidden, we have mentioned particularly three of the most injurious, the use of which we have advised to be wholly discontinued, but with this reservation, that they should be replaced by other analogous substances; for it must not be forgotten that the patient, as well as the cause of his disease, must be considered, since the complete deprivation of the patient of substances to which he has been accustomed may create a disturbance which will prove much more profound than that produced by the disease itself.

The system of an adult loses each day from 2000 to 3000 grams of water (urine, excrement, perspiration, etc.), nearly 300 grams of carbon (CO_2 , excrement, urea, etc.), and nearly 20 grams of nitrogen (urea, uric acid, etc.).

To make good these losses, the diet must include,—

relation to the disorders of digestion.]

A rational and efficient therapeutic action in relation to chronic maladies of



FIG. 3.

1. Water (2 to 3 liters).
2. Organic salts (30 to 35 grams).
3. Albuminoid substances.
4. Fat, or carbo-hydrates.

But in suppressing, for example, fat and bread from the dietary of a dyspeptic or an obese person, without substituting a food of similar composition, we should compromise the equilibrium of nutrition, since experience has shown that it is necessary to associate with albuminoid matters those of a non-nitrogenous character, and that man, as the herbivora, is not capable of living upon albumin alone without the addition of fat or starch.

The same reasoning applies also to liquids, which are equally necessary and useful in maintaining the general phenomena of hydration.

In order to construct a regimen, it is necessary to recall that rational alimentation corresponds to $3\frac{1}{2}$ parts or $4\frac{1}{2}$ parts of fat substances or of hydro-carbons for 1 part of nitrogenous substances. Thus, an adult man must consume, each day, 130 grams (2000 grains) of albumin, 84 grams (1300 grains) of fat, and 404 grams (6200 grains) of starch, containing altogether in round numbers, 300 grams (4600 grains) of carbon, 40 grams (600 grains) of hydrogen, 20 grams (300 grains) of nitrogen, and 200 grams (3000 grains) of oxygen. Starch and fat may replace each other mutually, 17 parts of starch corresponding to 10 parts of fat.

Foods of animal origin contain, ordinarily, too large a proportion of albuminoid substances, and too small a proportion of non-nitrogenous substances. Those of vegetable origin often present a contrary condition,—an excess of starch and a deficiency of albuminoids. It is necessary to have these physiological ideas in mind if one desires, in the preparation of the dietary, to make such a combination of nutritive elements as will meet the requirements of the body.

In dyspeptics, fatty matters taken as food are not perfectly emulsified in the intestine, where, normally, they should be in part saponified by the action of the pancreatic juice, to enable them to pass through the intestinal epithelium into the mesenteric vessels, thence reaching the blood through the thoracic duct. In consequence, serum of the blood of dyspeptics sometimes presents an excess of fat globules. In these cases butter must

not be used in the preparation of food, but cream, which is simply an emulsion of fatty particles easily saponified. When cream cannot be obtained, boiled milk may be used for the same purpose, but less advantageously.

The quantity of drink is also a matter of much importance. It should not exceed 300–400 grams (10–13 ounces) at a meal. The use of white wine, cider, and beer, which is recommended by some, leads many dyspeptics to consume more food than they require.

Of the three substances condemned, bread contributes most to disturbance of digestion through the abnormal fermentations which it promotes; nevertheless, it would be unwise wholly to exclude bread from the dietary, first, because it contributes food elements rich in phosphorus and carbon; and secondly, because many persons, if deprived of bread, would think themselves unable to eat anything.

Containing from 86 per cent to 90 per cent of starch matters, bread, in its composition, is a typical food for supplying carbo-hydrates. Its physiological role, as well as that of all farinaceous foods, is to undergo transformation into dextrine in the intestine before absorption by the portal vein, and finally to be transformed into glycogen by the diastases and the glycogenic function of the liver.

From this it results that if, by a pathological process of any sort, such as excessive production of hydrochloric acid, deficiency of diastase or other ferments, muscular atony of the stomach, the first phase of the digestion of starch—the transformation of starch into dextrine—is prevented, there appear in consequence, in the digestive tube, secondary acids, as lactic, acetic, and butyric acid, the presence of which is indicated clinically by acidity, pyrosis, and the production of gas.

We have undertaken to meet this difficulty as regards the imperfect digestion of starch, in the following manner:—

1. By the transformation, as complete as possible, of the starch of the bread into erythro-dextrine or soluble starch by rapid drying in the presence of an excess of diastase.

2. To substitute in the bread, for a portion of the starch, a corresponding portion of soluble vegetable albumin,

for it is known, not only that by the addition of starch to the dietary, we may to a considerable degree diminish the quantity of albumin without injury, but also that, vice versa, we may replace the starch by an equivalent proportion of albumin without disturbing the nutritive equilibrium.

We have, then, solved the problem by making a biscuit in which a certain proportion of albuminoid matter takes the place of an equal part of starch; also by the addition of vegetable diastase we have carried the slow fermentation to its last limit, taking care to introduce as much air as possible in the process of kneading. We recognize that all the elements of bread have undergone the complete action of the ferment when the dough becomes as elastic as India rubber and no longer adheres to the hand. Thus prepared, the biscuit is placed in an oven sufficiently heated, in the form of small cakes, so as to present as great a surface as possible to the heat. The baking is very short. If one weighs the bread before it dries, its weight will be found to be exactly that of the solid matter employed, indicating that complete dehydration has taken place,—a point of importance when the bread is intended to constitute a part of a dry dyspeptic regimen.

Digestion in a Dog without a Stomach.—MM. Carvallo and Pachon (*Archives de Physiologie*, January, 1894) have recently reported the results of a prolonged and careful investigation of the digestive process in a dog which had been deprived of his stomach, the stomach having been removed by the method of Czerny. It is very interesting to note that so far as could be observed, the dog deprived of the stomach remained in as good health as before. When fed upon a diet of bread and meat, the digestive process was apparently completed in a perfectly normal manner, as shown by microscopical chemical examination of the feces. In some experiments instituted for the purpose of determining the relative digestibility of cooked and uncooked meat, it was observed that the undigested residue was twice as great with a diet of uncooked meat as when the meat was cooked.

Other interesting series of experiments were undertaken for the purpose of de-

termining the antiseptic powers of the intestine, the dog being fed upon meat which had been allowed to decompose for twenty-four hours at a temperature of 100°. It was found, contrary to expectation, that the dog apparently suffered no ill consequences whatever, digesting thoroughly rotten meat as perfectly as does a healthy dog, and apparently suffering no inconvenience whatever from his septic diet.

The results of these experiments are not interpreted as demonstrating the inutility of the gastric juice as an antiseptic, but rather as demonstrating either that the bile or the intestinal fluids were possessed of greater antiseptic value than has been supposed, or that the liver, spleen, and perhaps other organs, are capable of destroying so great a quantity of ptomaines that the dog, at least, when temporarily fed upon decomposing flesh, suffers no injury, even though deprived of the antiseptic influence of the gastric juice.

Immunity by Heredity—M. M. Charrin and Gley communicated to the January number of the *Archives de Physiologie* an interesting paper in which they give the results of a long series of experiments in relation to the possibility of the transmission of acquired immunity by heredity. Their experiments clearly show immunity to be hereditary, not only through the mother, but also through the male parents. In the course of their investigations they made an experiment for the purpose of determining whether the immunity thus transmissible is due to organized substances in the material used for inoculation; or to some product of the tissues of the animal itself. The conclusion which they reached we quote as follows:—

“The cellular elements of the organism must be the source of the substance or substances the presence of which is revealed by the prevention of the development of microbes. The serum of the offspring, as well as the parent, is possessed of this property in the case of transmitted immunity. The tissues of the offspring as well as those of the parent have produced a protective body.”

“The hepatic cell of the parent produces bile. The hepatic cell of the offspring likewise makes bile. There is nothing surprising about this. Why

should we be surprised at the observation that the organism of the offspring produces liquids noxious to bacilli, when the cells of the parent produce these germicidal liquids? The organism of the first gives rise to the second. The morphological resemblances of the offspring to the parent are incontestable. The physiological properties may well be identical."

A Valuable Drug in the Treatment of Winter Cough.—Many are the single agents employed in the treatment of that persistent bronchial ailment known as "winter cough," and divers are the combinations made to suit each individual case. Agents proposed and lauded as "specifics" in this disease have signally failed to maintain the title. Among the new remedies named, but not brought forward as a specific at all, is the *eugenia chequen*, or cheken, a native Chilian drug. For a complete description of the agent, botanically and therapeutically, we refer our readers to the Pharmacology of the Newer Materia Medica, a brochure issued by Parke, Davis & Co., Detroit.

That it is a valuable addition to our list of agents for the treatment of bronchitis and its allied disorders, is evident to the writer. It has made a good record so far. It is worthy of a careful investigation and trial. Dr. Wm. Murrell, of the Royal Hospital for Diseases of the Chest, London, basing his opinion on notes of fifteen cases of chronic bronchitis in which he employed cheken, says: "In all cases the patient obtained some benefit, and in most instances the relief was very marked."

The fluid extract has a pleasant balsamic odor and taste. It is highly resinous, hence not miscible with water. It mixes nicely with glycerine and syrups, in which it should be administered. We advise a testing of its merits.—*Sanative Medicine.*

The Organic Acids.—M. Dupuy has recently brought out a work devoted to the organic acids, in which these substances have been studied with the same care with which ptomaines, alkaloids, and tox-albumens have been studied by others. Among the interesting facts brought out in this work, we note a few:—

Citric acid is found to be capable of

killing the cholera bacillus in the proportion of 8-1000 parts of water. The germicidal properties of carbonic acid gas are found to be diminished by the presence of alcohol and oil, but increased by hydrochloric and tartaric acids. Benzoic acid is an excellent antiseptic in the proportion of 1-1000. Aristol possesses the same valuable properties as iodoform, with freedom from unpleasant odors.

Unipolar Faradization.—Augustin Charpentier presents, in the July and October numbers of the *Archives de Physiologie*, interesting papers describing recent experiments by means of which he has demonstrated the possibility of exciting muscular activity through unipolar faradization. In applications of this sort, there is, of course, produced no current, but simply a change in potential, the result of the changes in potential occurring in the induction apparatus. It is found possible to excite two nerves upon opposite sides of the body by making a unipolar application of one and attaching the other with a wire held in the hand. If the wire connected with the second nerve was also connected with the earth, the excitation produced was considerably increased. The phenomena of unipolar faradization seemed to be closely allied to those of static induction.

For Acute Colds.—

R Betol, finely pul.,	25 parts.
Menthol,	2 $\frac{1}{2}$ "
Cocaine muriate,	1 "
Powdered coffee or starch,	15 "
Mix thoroughly.	

Use as snuff.

For Chilblains.—

R Tinct. digitalis,	1 $\frac{1}{2}$ dr.
Crystallized thymol,	40 gr.
Alcohol at 70°, glycerine aa,	6 oz. M

This preparation should be applied after thorough cleansing and careful drying of the parts. Light applications of tincture of iodine, repeated every three or four days, is an excellent means of removing the troublesome itching. Vaseline and oily substances of all sorts should be avoided. Wool and other warm covering aggravate the disorder.

BACTERIOLOGICAL NOTES.

[THE notes appearing in this department are abstracts or translations prepared expressly for MODERN MEDICINE AND BACTERIOLOGICAL REVIEW, from original sources.]

The Influence of Alcohol, Glycerine, and Oil upon the Action of Disinfectants.—Koch showed as long ago as 1881, that carbolic acid dissolved in alcohol or in oil, loses to a large extent its disinfecting power. P. Lenti, of the Institute of Hygiene, of Naples, has recently taken up the study again, and has reached the following results in a series of studies in which corrosive sublimate and lysol were considered, as well as carbolic acid :—

Corrosive sublimate dissolved in absolute alcohol does not destroy spores, even in so strong a solution as 1-250, and when in contact with the solution fully forty-eight hours. The only effect observed was the diminution in the virulence of the germs. When ten per cent of water was added to the alcohol, a solution of corrosive sublimate 1-1000 rendered the germs innocuous.

A two per cent solution of corrosive sublimate (1-50) in pure glycerine had no effect upon germs, even when left in contact for four days. The same result was noted with the addition of thirty per cent of water; but by increasing the proportion of water to forty per cent, a solution of corrosive sublimate (2-1000) destroyed spores at the end of twenty-four hours.

A ten per cent solution of carbolic acid in alcohol possessed no germicidal properties whatever. The same results were obtained when water was added, even in so large a proportion as fifty per cent. When the proportion of water reached eighty per cent, the germs were destroyed, providing the contact continued for forty-eight hours, but were still alive at the end of twenty-four hours.

A ten per cent solution of carbolic acid in pure glycerine was found to be powerless to destroy germs, even when left in contact with them for seventy-two hours. The same result was obtained when the solution contained ten per cent of water. In order to render the solution at all effective, it was necessary to increase the proportion of water to eighty

per cent, and contact for forty-eight hours was then required to completely destroy the germs.

A solution of carbolic acid in pure oil, even at a strength of twenty per cent, was found to be valueless as a germicide.

A ten per cent solution of lysol in oil was found to be equally valueless.

Identity of Croup and Diphtheria.—

The recent report of Dr. Bates, Chief Inspector of Contagious Diseases in the New York City Department of Health, giving the results of his bacteriological work for four months, presents important information in relation to the nature of membranous croup, which ought at once to be in the possession of every practicing physician. The identity of membranous croup and diphtheria has long been suspected. Dr. Bates found the bacillus of Loeffler in thirty out of thirty-six cases of laryngeal croup. In all of these cases the membrane was confined to the larynx. The result of this investigation will probably be the adoption of a rule by the Department of Health of New York City, requiring physicians to report all cases of laryngeal croup, and to isolate patients suffering from this disease. This action is certainly timely. In the opinion of the writer, however, clinical evidence would have justified the same action several years ago. It is now fully three years since the Michigan State Board of Health took action requiring physicians to report all cases of diphtheria, and all cases of membranous croup.

Microbes in Ice.—M. Riche, at the request of the French government, has recently made a study of the microbes to be found in ice. It was found that ice which to the eye is perfectly transparent, and apparently free from any sort of impurity, may contain more than seven times the amount of organic matter which is allowable in water for drinking purposes. One specimen of ice was found to contain 175,000 colonies of germs for each cubic centimeter ($\frac{1}{4}$ dram). This specimen contained more than forty times the amount of organic matter allowable. This subject is one which ought to receive more attention from sanitary officials than it does at the present time.

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CAUSES AND CURE OF CONSTIPATION.

THE causes of this exceedingly common condition are very numerous; some of the most common may be enumerated as follows:—

1. Prolapse of the bowels, a condition in which the stomach is usually involved, is the cause of chronic inactivity of the bowels in a very large number of cases, especially among elderly people. The proper causes of prolapsed bowels are two:—

(1.) Tight-lacing from corset-wearing or the pressure of tight bands, in women; or from wearing belts, a practice not uncommon among soldiers and certain classes of laborers, in men.

(2.) Relaxed condition of the abdominal muscles, common in both sexes, is the most frequent in women; the result either of improper dress or sedentary life and inattention to proper attitudes in sitting, standing, and walking. When the large intestine becomes prolapsed, it is not infrequently enfolded upon itself, so as to produce a sort of pseudo-stricture, so that the fecal matters detained in their passage along the intestine, become hardened and accumulate.

2. Dilatation of the large intestine results usually from over-accumulation of fecal matters, but is sometimes the result of abnormal fermentations. This condition may be the result of the preceding, as the pressure of vigorous abdominal muscle is necessary to prevent over-accumu-

lation of gas, and to support the thin walls of the intestines. It is quite likely, however, to result from neglect to empty the bowels regularly. When over-accumulation has been allowed to exist habitually for some months or years, the walls of the intestines may be permanently stretched so that their natural muscular activity is gone and can never be recovered, although some improvement may be secured by proper treatment. This condition is common in both sexes, but is more frequent in women, and is the direct result of improper dress and sedentary habits.

3. Dilatation of the stomach, a condition exceedingly common in persons suffering from dyspepsia, existing in fully one half of all cases of this sort; sometimes becomes a cause of constipation by provoking intestinal catarrh through the irritating influence of fermented and improperly digested substances, which, after a long delay, escape from the stomach into the intestine.

4. General weakness and relaxation of the muscular system of the body may induce a similar condition of the intestinal muscles, resulting in constipation from deficient peristaltic activity; hence, exhausting labor, or in fact anything which exhausts the nerve centers, may give rise to intestinal sluggishness.

5. A torpid liver, by which is meant a liver which does not secrete a sufficient quantity of bile, may be the cause of constipation. Bile is a natural laxative, serving to stimulate the muscular contraction of the intestinal walls. When deficient in quantity, deficient intestinal activity is a natural result. Anything which clogs the liver, or renders it inactive, may be a cause of constipation. The excessive use of sweets, fats, and the use of animal food, condiments, tea, and coffee, must all be considered as productive of constipation, through their influence upon the liver.

6. Hemorrhoids may be a cause of in-

testinal inactivity, acting mechanically to prevent complete evacuation of the bowels, and to cause a retention and hardening of fecal matter. The number of persons who carry about with them constantly, considerable quantities of hardened fecal matter in the large intestine, must be very great, as we may judge from the results of treatment in dislodging old accumulations of this sort in cases which have come under our care. In some cases, great quantities of black and decomposing matter have been discharged after two or three weeks, during which time the patient's bowels had been daily washed out with two or three quarts of warm water applied in the most thorough manner possible.

7. Rectal ulcer, catarrh of the rectum, and irritable rectum resulting in spasmodic contractions of the muscles which close the lower end of the bowel, sometimes induce constipation by presenting too great resistance to the expulsive effort by which the fecal matters are discharged from the body, so that the bowel is never completely emptied, and the accumulations thus begun are gradually increased.

8. A loss of natural sensibility in the mucous membrane of the rectum is doubtless a frequent cause of constipation. This semi-paralyzed condition is usually due to neglect to evacuate the bowels at a regular time. After long neglect of this sort, the natural reflex activities by which the bowels are stimulated to expulsive action, are no longer awakened by the presence of fecal matters in the rectum, and constipation is the result.

9. Another cause of constipation should be mentioned; excessive dryness of the fecal matters, which prevents their ready movement along the large intestine. This is usually the result of too long retention within the large bowel, but may result from other causes, as a feverish condition, or from a deficient secretion of the mucus which acts as a lubricant.

10. Many persons are suffering from

chronic constipation as the result of "orificial surgery." The rectum not only contains pockets in which a quantity of mucus is formed for the purpose of lubricating the fecal mass as it is expelled from the body, but a fringe of papillæ is also found in the healthy rectum just within the anal orifice. These papillæ are connected with nerves, the function of which is to bring forcibly and involuntarily into action at just the right moment the strong muscles of the abdominal walls, so as to accomplish complete evacuation of the bowels. These pockets and papillæ were discovered, not by Dr. Pratt, of Chicago, but by Prof. Horner, the eminent anatomist of Philadelphia, who described and pictured them in his Anatomical Atlas, nearly half a century ago. The orificial surgeon industriously trims off every papilla, and slits up every pocket, for no other reason, than we have been able to discover, except the lining of his own pockets, but certainly to the great disadvantage of the patient, who, with his rectum thus maimed, has lost two important links in the chain of automatic activities by which nature secures a daily evacuation of the bowels.

Treatment.—Any course of treatment, to be curative of this condition, must take into consideration all the various possible causes which may have brought about the intestinal inactivity in any particular individual case. It is necessary also, not only to remove these causes, but to repair, so far as possible, by the application of efficient means, the damage which has been wrought by wrong habits and morbid influences.

The matter of first importance in the treatment of constipation is the diet. The abundant use of fruit is one of the most excellent means of preventing and curing this disease. One or two oranges before breakfast, a couple of apples at breakfast, the free use of steamed figs, stewed prunes, and all other fruits, are means to be recommended in nearly all

cases of chronic constipation. There are, of course, some cases in which fruits must be avoided. In these cases coarse grains serve a useful purpose—cracked wheat, oatmeal, Graham or bran bread, bran cakes, peas, beans, lentils, asparagus, green peas, string beans, and similar vegetables which are easy of digestion, but which contain a considerable amount of woody or indigestible substance, may also be advantageously used. Coarse vegetables, however, must be avoided in cases where there is marked dilatation of the stomach. Granola, gofio, and other excellent health foods manufactured by the Battle Creek Sanitarium Health Food Co., Battle Creek, Mich., have proved of very great value to thousands of persons suffering from this condition. A glass of cold water before breakfast is a prescription which has cured many cases of constipation. The free use of water, either hot or cold, taken one or two hours before each meal, is a means of value.

Exercises of various kinds, particularly such as bring into active play the muscles of the lower part of the trunk, are essential in the treatment of many cases of intestinal inactivity. Walking three to five miles a day, especially a brisk walk before breakfast, is sufficient to secure regularity of the bowels in many persons.

The exercises of the Ling system, known as Swedish gymnastics, we have found of special value in the treatment of this class of cases at the Battle Creek Sanitarium during many years. Horse-back riding and bicycle riding are also of very great value.

Various passive exercises are indispensable in cases of feeble persons, such as massage of the bowels. This is best taken lying upon the back with the shoulders raised and the knees drawn up. Pains should be taken to knead the bowels in the direction of the colon, beginning low down on the right side. Kneading may be done with the hands placed flat upon

the abdomen or with closed fists. The movement should be begun at the lower right side of the abdomen, passing up the right side, then across just beneath the ribs, then down to the left groin, one hand following the other in such a way as to force the contents of the colon along. A cannon ball weighing five or six pounds covered with leather rolled along the course of the colon from right to left, is of service in many cases. Weighted compresses, consisting of a quilted compress containing shot, of sufficient size to cover the whole abdomen, are very useful. The patient should lie with the compress upon the abdomen for half an hour; kneading of the compress may be practiced at the same time, or the cannon ball may be used outside the compress. Shot bags may be used in much the same way as the cannon ball, and with equally good effect. The bag should contain five to ten pounds of rather fine shot. Such exercises as raising the limbs when lying upon the back, first one and then the other, then both together, are of special value. Exercises of raising the hips are also useful. Raising the head and legs may be practiced at the same time, making a very vigorous exercise which is of great value. Breathing exercises, which bring into full play the diaphragm and abdominal muscles, are a most excellent means of restoring intestinal activity.

Measures of treatment of a hygienic character are of far greater utility in these cases than drugs of any sort, for the reason that they do not, like drugs, lose their efficiency in a short time, requiring larger and larger doses and finally failing to act.

One of the most valuable measures of treatment in cases of constipation is the moist abdominal bandage. This consists of a towel wrung as dry as possible out of cold water and wrapped around the trunk, and covered with several thicknesses of dry flannel to keep it warm,

and if necessary, to prevent chilling, a covering of oil muslin may be placed outside of the flannel wrapping. This bandage should be worn over night, being removed in the morning, and the trunk and the rest of the body rubbed with a towel or sponge dipped in cold water. A dry bandage may be worn with advantage during the day, especially in cases in which there is prolapse of the bowels, as shown by protrusion of the lower abdomen. In prolapse of the bowels the bandage should be placed around the lower abdomen and drawn tight so as to form a support for the bowels. In many cases of constipation, prolapse of the colon constitutes a mechanical cause of bowel obstruction.

Application of electricity to the abdomen, or to the abdomen and rectum, especially the use of the sinusoidal current, is of great value in obstinate cases. In some cases, especially those in which there is great tenderness of the abdomen, galvanism applied to the spine and abdomen is of special value. A sitz bath taken two or three times a week; a daily spinal douche of cold water, which may be taken by sitting upon the edge of a tub while water is poured upon the spine from a dipper; also the cold douche to the abdomen, taken in much the same way, are measures of great value in obstinate cases. In cases in which the bowels cannot be made to move otherwise, an enema should be administered. Care should be taken, however, not to become dependent upon the enema.

Introduction into the rectum of a small quantity of cold water, half a pint or a pint, before breakfast, to be retained until after breakfast, is a measure of value. A small, cold enema taken at the regular time for the bowels to move, is better than a large warm enema, as it is a more powerful stimulant of intestinal activity. A small amount of cold water introduced into the rectum at night upon retiring, is a useful measure in cases where the in-

testinal contents are dry and hard; half a pint or a pint is a sufficient amount. In some cases in which the stools are large and the rectum irritable, an ounce or two of olive or almond oil introduced at night or before breakfast is a useful measure. Camphor water, consisting of three or four ounces of water with half a teaspoonful of spirits of camphor, may be introduced into the rectum before breakfast with advantage in many cases. Some cases are relieved by the introduction of a small quantity of glycerine, two or three teaspoonfuls with as many tablespoonfuls of water; in some cases a larger amount of glycerine is necessary. Suppositories made of glycerine or glycerine and camphor, are also valuable for the same purpose; they may be introduced either at night or before breakfast, or at both times.

When the rectum is the seat of catarrh, a mixture consisting of equal parts of starch and boracic acid, introduced by means of a proper instrument, is a very valuable measure. Equal parts of boracic acid and sub-carbonate of bismuth, or sub-carbonate of bismuth alone, is preferable when there is an extreme degree of irritation.

It must not be forgotten that regularity in attending to the demands of nature is a matter of the utmost consequence in these cases, both as a preventive and a curative measure. In some cases the inability to evacuate the bowels is due to weakness of the abdominal muscles, it being sometimes necessary to aid the bowels by pressure of the hands. We have had several cases in which there was inability to evacuate the bowels when sitting in the usual position, but no difficulty when a crouching position was assumed; this is doubtless due to the increased pressure which is brought to bear upon the abdominal contents when sitting in a crouched position.

Some cases of constipation tax the skill and ingenuity of the physician to

the utmost, and cannot be relieved by such simple measures as can be undertaken at home. There is now and then a case, like that of the notorious Dr. Hall, of New York, in which extreme dilatation of the colon exists, so that this organ has entirely lost its power to contract upon itself, and has become little more than a lifeless sac. In such cases the constant use of the enema or colo-clyster is the only means by which the bowels can be relieved, and this means must be employed habitually.

THE BACTERIOLOGICAL EXAMINATION OF WATER.

IN the last number of this journal, in a brief abstract relating to a series of experiments made by Blachstein, in the Pasteur Institute, of Paris, relating to the best methods of making a bacteriological examination of water, no reference was made to the fact that the method described was originated by Prof. V. C. Vaughan, and has been in use in the Laboratory of Hygiene of the University of Michigan, under Prof. Vaughan, during the last five years, and with most satisfactory results. This omission was due to the fact that no reference was made to Prof. Vaughan's priority in relation to this method, in the original article in the *Annales de l'Institut Pasteur* from which the abstract was made, and at the time of its publication we were not aware of the fact that Prof. Vaughan was the originator of the method referred to. We are glad to call attention to this oversight, and feel sure that Prof. Vaughan will consider himself complimented that his important discovery was considered so valuable by a distinguished European investigator that he thought it worth while to appropriate it as his own. It is possible, of course, that Blachstein, like ourselves, may have been in ignorance of the fact that Prof. Vaughan was entitled to credit for this

important discovery. The method referred to consists in making a culture in bouillon of the water under examination, and then inoculating small animals with the culture thus obtained.

BRAINS OF MEN AND WOMEN.

THE fact that the average woman's brain weighs less than that of the average man has been made the foundation for the argument that woman possesses less mental capacity, intelligence, etc., than man. By the same line of argument man may be shown to possess less intelligence and brain power than the elephant whose brain is considerably larger than the largest human brain ever measured.

This mode of reasoning is certainly erroneous. It is well enough known that small men with small brains sometimes possess as high a degree of intellectual activity as larger men with larger brains. It seems to be forgotten that a large part of the brain is concerned, not in intellectual activity, but in the management of the muscles, viscera, the heart, lungs, liver, etc. A man with a small brain in a small body may have a larger number of nerve cells devoted to intellectual activity than another man with a larger brain, but with a body disproportionately larger. The absolute size of the brain cannot be considered as the proper criterion for intellectual activity, but the size of the brain as compared with the body, leaving out, of course, cases of extreme obesity and extreme emaciation. When measured by this rule, the size of the brain of the average woman being compared with the weight of the average woman, and the size of the brain of the average man with the weight of the average man, the two results placed side by side show woman to have as large a brain in proportion to the size of her body as man.

This is true not only of the brain of

the adult woman, but of the girl as well. The average boy of seven years has a brain weighing 1100 grams, and his body weighs 20,160 grams. The brain of the average girl of seven years weighs 1000 grams, while the body weighs 18,450 grams. A comparison of the relative weights of the brain and the body in the boy and the girl of seven years, shows the girl to have a slightly larger brain in proportion to her weight than the boy.

The controversy upon this question, which has sometimes waxed very warm, has taken a wrong direction. It is not a question of quantity or capacity, but one of quality. Viewed from this standpoint, the question is comparatively free from difficulties, and this discussion should not give rise to disparaging remarks on either side.

American Consumption of Diseased Meats.—American meat has, for some years, enjoyed so unsavory a reputation abroad that it has become necessary for the Government to provide a regular corps of inspectors of meat that is to be shipped abroad, and to put its seal upon all foreign shipments of meats, in order to secure any sale for this class of American food products abroad. But this inspection is, for the most part, confined to meats that are shipped to foreign countries. American consumers of meat are not thus protected. A man who has for many years been employed in the Chicago stock-yards, stated to the writer less than a year ago that he had many times assisted in smuggling diseased cattle into side pens from whence they were conveyed to slaughter houses and prepared for the market. He assured us it was not at all difficult to evade the inspectors, and that the thing was a matter of every-day occurrence, that thousands of these cattle were thus slaughtered and consumed annually.

Recently this fact has become so notorious that the mayor of Chicago has

found it necessary to take the matter in hand, and has issued peremptory orders that the licenses of all slaughtering establishments should be permanently revoked when it is found that diseased animals have been killed in them. The *Chicago Tribune*, which is always on the alert for matters of this sort, has been looking this matter up, and publishes in a recent issue the following report of an interview with the Health Commissioner, which conveys information which ought to be sufficiently startling to induce every consumer of beef to ask himself the question: Is it safe to indulge in the use of the flesh of animals as food?

"It is the duty of the State Inspectors to inspect cattle on the hoof, of the city inspectors to inspect meat only. There are not enough State inspectors for the work, and I have had my five inspectors given the power of the State men. The Health Department inspectors condemned 1,350,337 pounds of meat last year as being unfit for human food. I do not presume we caught a fractional part of the whole amount. In justice to the largest packers I want to say that no diseased meat is ever found in their establishments. But there are numerous proprietors of small establishments who resort to every possible device to get a diseased animal into the pens without the knowledge of the inspectors. It is those fellows we are after. The United States Government inspects every pound of meat that goes to foreign countries, and I think the people of Chicago should be given the same protection that foreigners have."

Results of Infantile Dyspepsia.—Marfan and Monrot, two eminent French physicians, have recently shown that broncho-pneumonia, and various other pulmonary maladies occurring in children, are due to infection resulting from chronic indigestion, which is so often the result of incorrect feeding. This was found to be

be the case in thirteen of eighteen cases. This is a matter of great practical importance. It is more than probable that a great share of the ills, not only of childhood, but of adult age also, are due to errors in feeding. The lives of many persons are made miserable as the result of inconveniences arising from a dilated stomach, the origin of which was frequently recurring attacks of indigestion during the first years of life.

Is Carbonic Acid an Antiseptic?

M. d'Arsonval has for some time been preparing organic liquids for injection by submission to the action of carbonic acid at a pressure of fifty to sixty atmospheres, which he believes to be completely capable of sterilizing these liquids. MM. Sabrazez and Bazin have recently undertaken experiments for the purpose of verifying the results obtained by d'Arsonval, and have come to the conclusion that CO₂, even under prolonged pressure at 59 to 60 atmospheres, has no appreciable microbicide properties. The staphylococcus pyogenus aureus, typhoid bacillus, bacterium coli, and other microbes are employed in the experiment. This subject must be further investigated before we can rely upon CO₂ as a disinfectant.

REVIEWS.

A Consideration of the Cause of Typhoid Fever in Chicago. By O. M. Huff, M. D., Chicago.

Dr. Huff has made a careful study of the statistics of typhoid fever in Chicago, and presents some appalling facts, not the least important of which is exhibited in the alarming statement that the deaths from typhoid fever in Chicago in 1891 were seven times as great in proportion to the population as in the City of New York, amounting to 16.64 per ten thousand inhabitants. The condition of things was somewhat improved in 1892,

although the death rate still remained three times as great as in New York, five times as great as in London, and more than six times the rate of Berlin. The doctor has made a minute study of the relation of discontinuing epidemic typhoid fever to the water supply of Chicago and has demonstrated to the satisfaction of any reasonable person that the contamination of the drinking water with sewage is the efficient cause of this alarming mortality from this epidemic and endemic disease. The late Dr. Parkes, of England, once said, "When a man dies of typhoid fever, somebody ought to be hanged." Chicago has been very busy executing anarchists and other enemies to public health, but has forgotten to give attention to these manufactories which are responsible for the annual deaths of more than a thousand people for whose lives somebody is certainly responsible. Lake Michigan serves both as a water bucket and a cesspool for Chicago, and this unhappy combination has doubtless been responsible for the loss of more than ten thousand lives within a brief period. Every resident of Chicago ought to be advised of the fact that there is death in the water pipe.

Establishing a New Method of Artificial Respiration in Asphyxia Neonatorum, by J. Harvey Dew, M. D., New York.

This little paper, illustrated by four half-tone cuts, describes a method of practicing artificial respiration in asphyxia of the newborn, which impresses us as being in the highest degree practical, and one that ought to be brought before the profession. The author is to be commended for his practical ingenuity, and for the clear and concise manner in which he has presented his method to the profession. We reproduce the description in this number for the benefit of our readers, and feel sure that those who employ it will find it effectual.

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DR. S. T. BAKER, of Toledo, Ohio, in a recent letter writes: "I am using Antikamnia with marked success, and in fact I could not do without it in some cases. For chordee, I am using it in ten-grain powders at bedtime, and find one powder usually prevents it for the night."

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EUROPHEN IN MINOR SURGERY.—Europhen possesses qualities which serve to render it an ideal dressing in minor surgery. Among them must be mentioned especially its powerful antiseptic and cicatrizant action, its property of diminishing secretions, and its freedom from odor, and irritating and poisonous effects. Recently, Drs. Offelein and Neuberger (*Monatsh. f. prakt. Dermatol.*, Bd. XVII, 1893) have reported over two hundred cases in which europhen proved an admirable remedy. In the treatment of incised, contused, and even sup-

purating wounds, injuries by machinery with extensive loss of substance, phlegmons of the hand, and compound fractures of the fingers, healing occurred rapidly and without reaction under the use of a europhen dressing, frequently without previous disinfection. In cases of erosions on the penis and vulva, fissure of the anus, and especially balanitis, the discharge and inflammation promptly subsided, sometimes even after one application of the powder. It is especially emphasized that eczematous irritation was never observed. A three per cent ointment of europhen in vaseline had an admirable effect in burns of the first and second degree, and in four cases of ulcerating lupus, its cicatrizant action was strikingly exhibited. In the treatment of chancroids, of which thirty cases came under observation, europhen proved a perfect and effective substitute for iodoform. It was applied in the form of the powder two or three times daily, and, if crusts formed, in connection with a one per cent ointment. The authors' favorable experience with europhen led them to recommend it in the treatment of moist papules on the genitals and tertiary ulcerations, best in the form of five to ten per cent ointments. Subcutaneous injections of a one per cent solution in oil also had a favorable influence in tertiary syphilis, with or without the internal administration of iodide of potash; and unlike the injection of mercurials, they were found perfectly free from pain and irritation.

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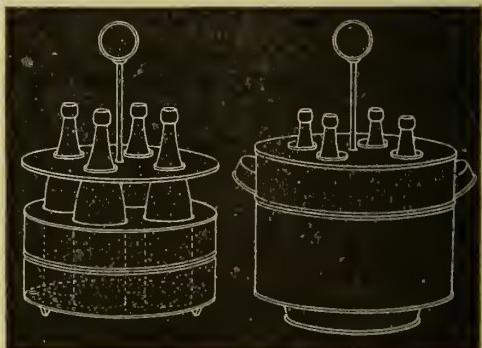


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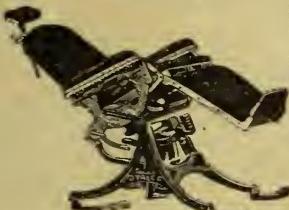


Fig. V—Semi-Reclining.

- 1st. Raised by foot and lowered by automatic device.—Fig. I.
- 2nd. Raising and lowering without revolving the upper part of the chair.—Fig. VII.
- 3rd. Obtaining height of 39½ inches.—Fig. VII.
- 4th. As strong in the highest, as when in the lowest position.—Fig. VII.
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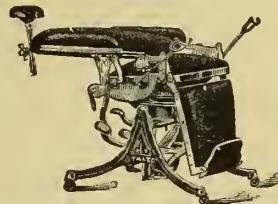


Fig. XVII—Dorsal Position.

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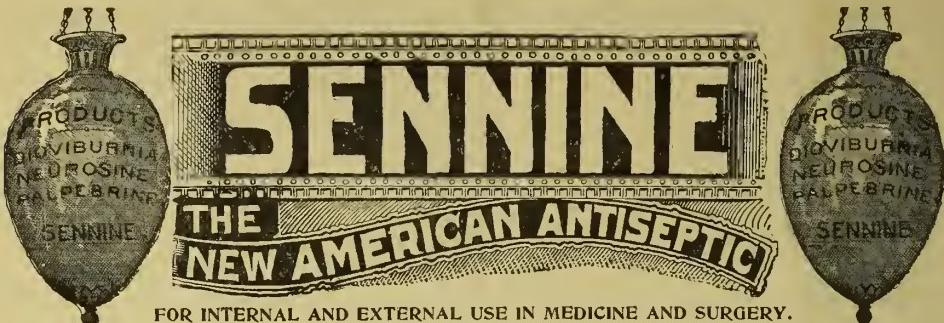
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L. Ch. Boislinere, M. D., Prof. of Obstetrics, St. Louis Medical College.

St. Louis, June 18, 1888.

I have given DIOVIBURNIA a fair trial, and found it useful as a uterine tonic and antispasmodic, relieving the pains of dysmenorrhœa, and regulating the uterine functions. I feel authorized to give this recommendation of DIOVIBURNIA, as it is neither a patented nor a secret medicine.

L. Ch. BOISLINERE, M. D.

From John B. Johnson, Professor of the Principles and Practice of Medicine, St. Louis Medical College.

St. Louis, June 20, 1888.

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JOHN B. JOHNSON.

H. Tuholse, M. D., Professor Clinical Surgery and Surgical Pathology, Missouri Medical College, also Post-Graduate School of St. Louis.

St. Louis, June 23, 1888.

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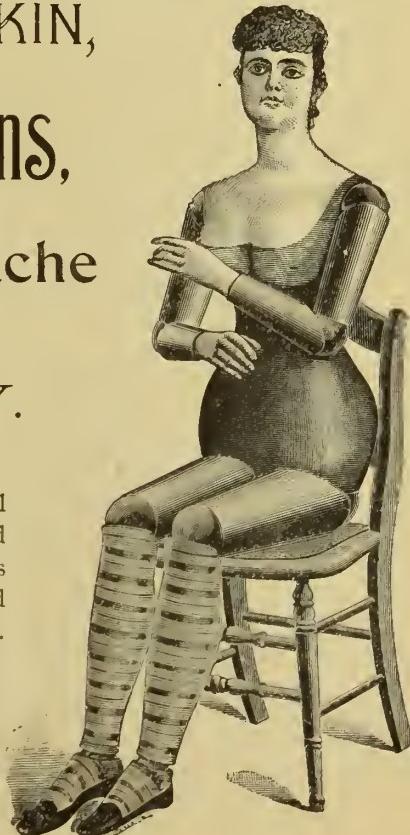
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Specimen page from Encyclopedia of Medicine and Surgery.

186

BANDAGING.

limb—single, double, or split—serves to retain rectal dressings, with the advantage that the split tails may come up on each side of the scrotum.

(6) *The four-tailed bandage* is used in fracture of the lower jaw.

(7) *The many-tailed bandage* (or bandage of Scultetus), consists of a central strip or backbone of bandage, to

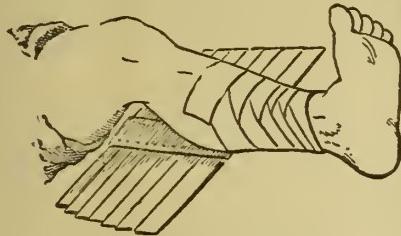
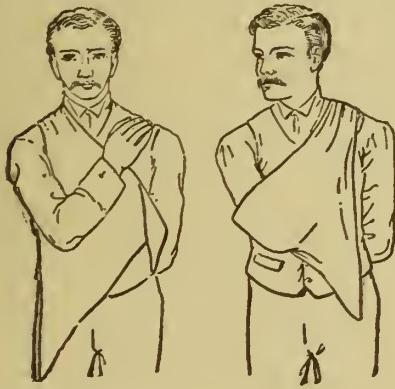


FIG. 31.—Many-Tailed Bandage.

which some eighteen shorter imbricated strips (Fig. 31) are stitched at right angles. The limb is laid on the bandage so that its axis corresponds with the central strip and, beginning at the periphery, the strips are gently and firmly folded over as seen in the diagram. A pin at each side, securing the two last strips to their predecessors, serves to fasten all safely. By taking out the pins,

FIGS. 32 and 33.—Triangular Handkerchief supporting the Elbow, *a* and *b*.

and flinging the tails right and left, the whole bandage is readily taken down, and a fresh dressing having been applied, the strips may once more be folded over so that the limb need not be disturbed in

the least. For burns and painful wounds, such a bandage is to be commended.

(8) *The triangular handkerchief*.—The use of slings, in place of the bandage, has been revived in recent years. Esomarsh, of Kiel, has especially drawn attention to their use in military surgery. The handkerchief possesses many advantages. It can be speedily and easily applied. It is available for many varied purposes, and is readily washed. In using the sling, the base of the triangle

FIG. 34.—Triangular Handkerchief supporting the Elbow, *c*.

should always be applied to the part which requires support. Thus we see in Figs. 33 and 34, the elbow and wrist suspended. The loose end may be tucked up, and for neatness secured with a safety-pin; but on no account should the pin bear any weight—that is all borne by the longer ends of the handkerchief, which should be tied in a reef-knot.

Fig. 39 shows the sling adapted to retain dressings on the head. In a similar way, we may cover in the hand or foot. With one handkerchief rolled as a cravat, and applied so as to give a fixed point, a second may serve to secure a dressing, as in Figs. 37 and 38, where the shoulder and hip are seen covered in. Such examples may suffice.

(9) *The square handkerchief*.—A good head-dressing may be formed from a

Specimen page from System of Obstetrics.*Mechanism of Accouchement.—Fœtal Phenomena.*

207

so that the head is placed in the occipito-pubic position. Whether first to last, then, the head becomes occipito-pubic in issuing from the genital organs.

6. *Disengagement of the head.*—The head, generally aided by the accoucheur, is disengaged by a swinging movement, or by a hinge movement around the pubes, analogous to that of the vertex presentation, but the head being turned in the opposite direction there successively escape from the vulva, at the fourchette, the chin, the mouth, the nose, the eyes, and the forehead; after the passage of the frontal protuberances the head escapes brusquely.



FIG. 254.—Successive disengagement of the trunk (variety of the buttocks is here represented; disengagement is the same, with complete breech).

Mechanism in each position and in each variety of presentation.—Position (complete breech).—L S I A has been taken as the type and described above.

R S I A.—The right buttock turns forward from left to right to be placed under the pubes. The rotation of the occiput is always made under the symphysis and disengagement is occipito-pubic.

L S I P.—The left buttock turns forward and from left to right.

R S I P.—The right thigh turns forward and from right to left.

Varieties of presentation.—The complete breech has been taken as the type of the mechanism. All that has been said applies to this variety.

Incomplete breech, variety of the buttocks.—The engagement in this variety often occurs during pregnancy. This precocity is due to the relative diminution of the fœtal pelvis by the extension of the

Specimen page from System of Gynecology.*Ovarian Cysts.*

439

the contiguous parts, and it is very difficult and sometimes impossible to enucleate them. Dermoid cysts have also been seen to lodge in the retro-peritoneal pelvic cellular tissue.

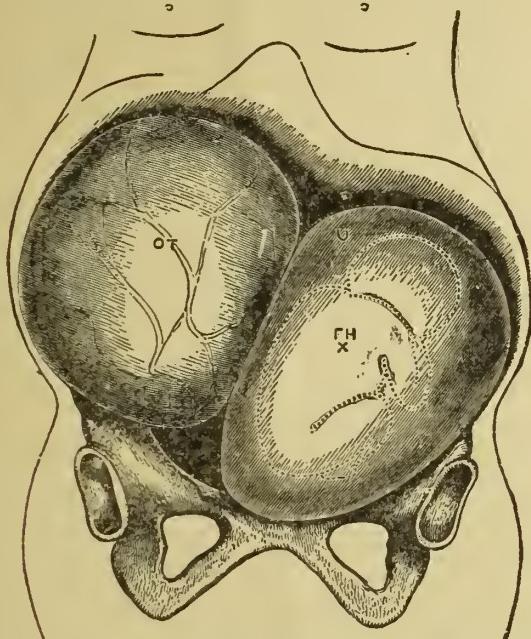


FIG. 241.—Cyst of the ovary complicating pregnancy. O T, cyst pushed out of the pelvis by the uterus; F H, center of auscultation of the fetal heart sounds.

Adhesions.—In the first stages of the development of cysts the cylindrical epithelium which covers them protects against the formation of adhesions (Waldeyer). But the desquamation of this covering permits, finally, the formation of adhesions under the influence of friction and external irritations. Loose and glutinous in the beginning, they become more and more fixed with time. The anterior surface of the cyst has been seen to be so intimately adherent to the peritonæum that operators have detached this structure from the abdominal walls for some distance under the belief that they were separating the cyst itself. The epiploic adhesions may be so extensive and so vascular that the cyst finds its principal source of nourishment in them. The intestine may be fused with the cyst wall so that a dissection may be impossible. Adhesions to the pelvic walls are especially grave on account of the danger of rupture of a ureter or of a large vessel; it is sometimes impossible to overcome them when they are very extensive. They are almost always distinct adhesions of a retro-peritoneal cyst without interposition of the serosa.

Ascites.—The presence of a very small quantity of liquid in the peritonæum is quite frequent, but its accumulation in the form of

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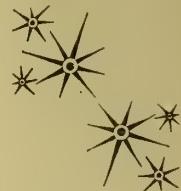
(FLUID EXTRACT)

IN RESPIRATORY INFLAMMATIONS.

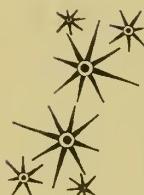
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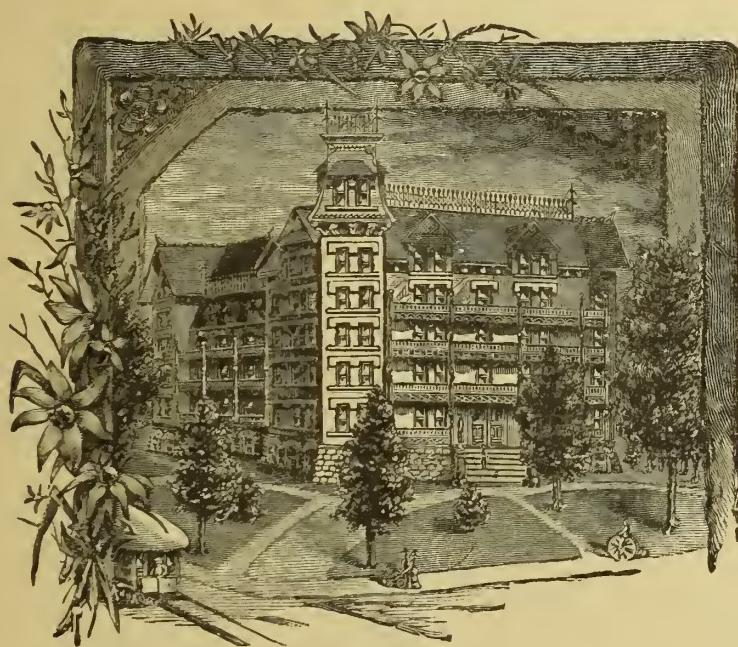
Dr. Murrell, of the Royal Hospital for Diseases of the Chest, London, states as follows :—

"Myrtus Chekan I have tested in fifteen cases of chronic bronchitis, all the patients with one exception being men. The age of the woman was 51; the ages of the men ranged from 36 to 58. They were all bad cases, most of them of many years' duration. Many of them had been attended at the hospital for some considerable time, and almost without exception they had in former years undergone much medical treatment with comparatively little benefit. Their occupations exposed them to cold, and wet, and draught, and in some instances they had the additional disadvantage of working in a dusty atmosphere. They complained chiefly of paroxysmal cough, with thick, yellow expectoration, and much shortness of breath on exertion. On physical examination of the chest, emphysema was detected, with or without a little rhoncus of the bases behind. *They were, in fact, ordinary cases of winter-cough.* The fluid extract of Chekan was ordered in two-drachm doses in a little water every four hours, the dose usually being increased at the expiration of a week to half an ounce. The medicine was always taken without difficulty. In all cases the patient obtained some benefit, and in most instances the relief was very marked. There was in a few days a decided improvement in the cough, expectoration was from the first easier and soon diminished in quantity, and finally the dyspnoea was less."

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3. If after examination by the superintendent, the patient's case is considered incurable, or not suitable for an operation, the person will at once go or be taken elsewhere.
4. The sum of \$4.00 per week, to cover actual cost of board, must be paid promptly. A charge for nursing will be made at the rate

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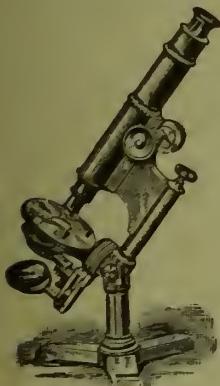
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No. 3.

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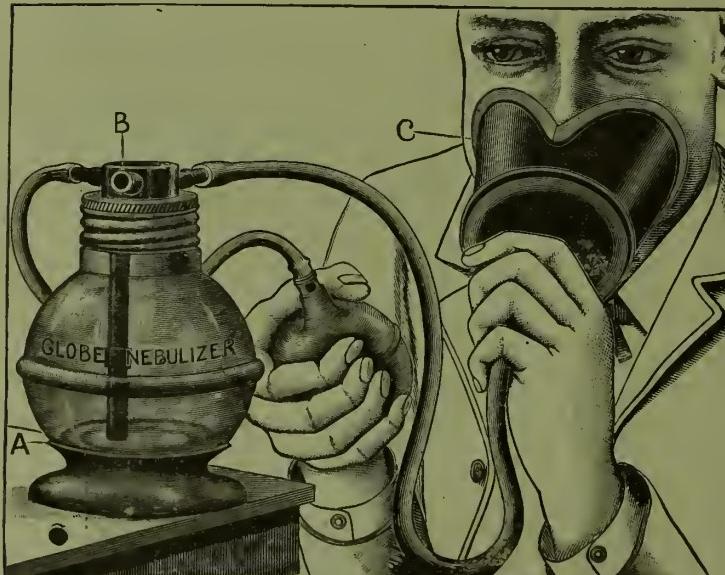
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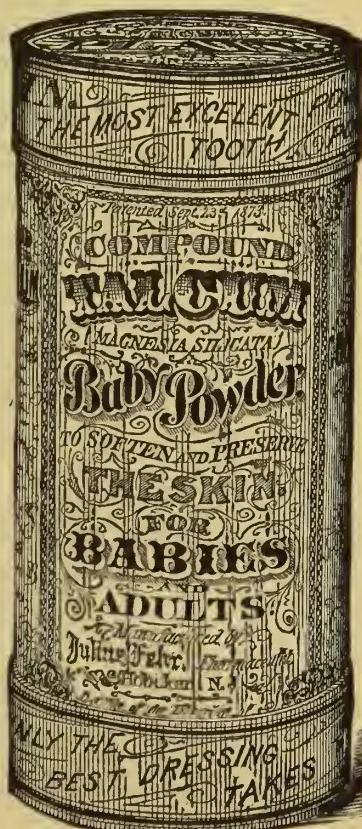
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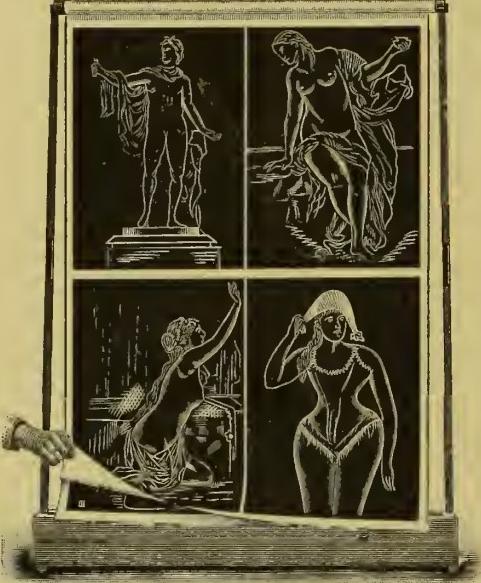
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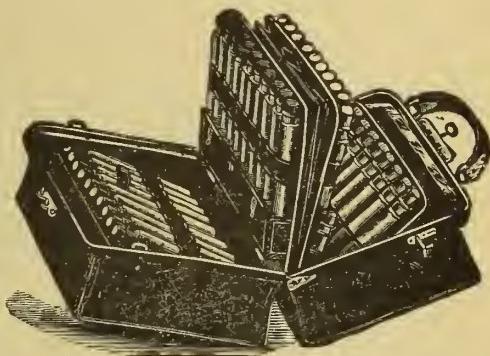
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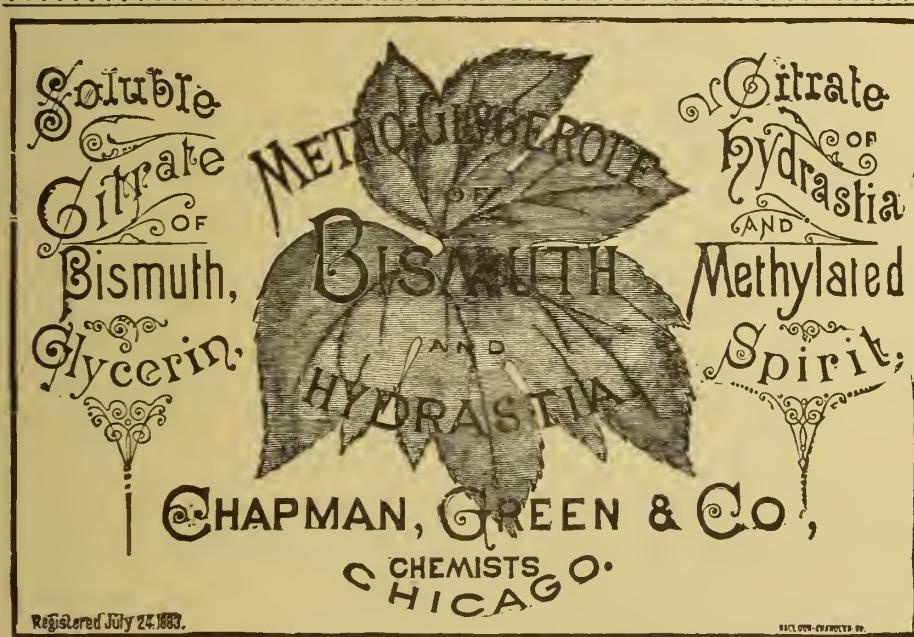
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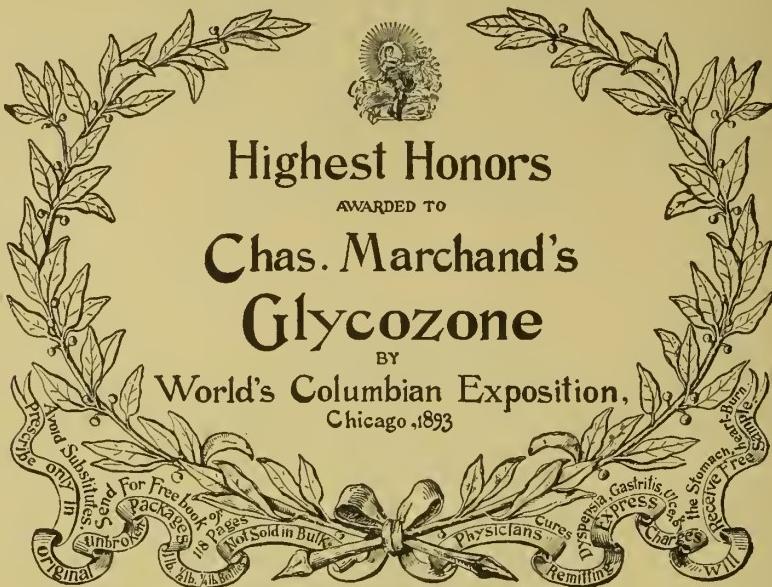
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BACTERIOLOGICAL REVIEW.

VOL. III.

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NO. 3.

ORIGINAL ARTICLES.

SHORTENING THE ROUND LIGAMENTS VS. VEN- TRAL FIXATION IN RETROVERSION.

BY J. H. KELLOGG, M. D.,

Battle Creek, Mich.

(Concluded.)

2. "The ligaments may be so small that they will not stand the necessary tension for shortening, and . . . sufficient tension to draw up the uterus and stretch adhesions, cannot be produced without the danger of rupturing the normal ligament."

Here again, the method of operating is at fault, and not the operation itself. Before the operation is begun, the uterus should be completely replaced; existing adhesions must be broken up by bi-manual manipulation. If this cannot be done, the operation will be useless. Nothing could be more absurd than to undertake to break up adhesions by pulling on the round ligaments. It sometimes requires as much force as can easily be exerted by the fingers to break up old and extensive adhesions. If the uterus cannot be placed in complete anteversion before the operation, and kept well forward by a properly fitting pessary, the case is not likely to be benefited by the operation of shortening the round ligaments, and should be rejected as a case unsuited to the operation.

Probably the performance of the operation in cases of this sort, which are from the start doomed to failure, is one of the reasons why the operation of shortening the round ligaments has been discouraged by some operators. The sole difficulty seems to be in a lack of understanding as to what is expected of the round ligaments. They are not

expected to sustain the weight of the uterus, but only to tilt it forward and prevent the top of the organ from dropping backward so far as to be caught by the small intestines and forced into the hollow of the sacrum. So long as the small intestines lie behind the uterus, the anterior wall of the uterus lying in contact with the bladder, there is no danger that retroversion will occur. When a woman stands upon her feet, the top of the fundus of the uterus lies at a higher level than the internal openings of the inguinal canal; and consequently the ligaments are under strain by the weight of the uterus only when the woman is lying upon her back, unless the organ is prolapsed or retroverted. In the dorsal decubitus, the viscera rest upon the posterior wall of the abdominal cavity, and hence there is no tendency to downward displacement.

3. "In drawing the uterus up by the round ligaments, vascular adhesions . . . may be torn . . . and result in pelvic hæmatocele."

This objection is in the highest degree absurd. If any hæmatocele occurs, it will be the result of the replacement of the uterus, which should be performed before the operation for shortening the ligaments is undertaken. If this objection holds good against the operation for shortening the ligaments, it is only because replacement of the uterus and breaking up of the adhesions is necessary before the operation, and this procedure, if any, is to be condemned, rather than the operation for shortening the ligaments, which has in itself nothing whatever to do with the breaking up of the adhesions. However, I do not consider the objection a valid one, even against the breaking up of the adhesions by bi-manual manipulation. When this operation is properly performed, without the exercise of unreasonable force, it is

not likely to be attended by any serious consequences, except in cases in which pus tubes may be ruptured by manipulation. An acute diagnostician, however, would not be likely to make a blunder of this sort, and one who is not an expert in diagnosis has no business to undertake the treatment of this class of cases. Perhaps the unsuccessful experiments of tyros may be in part responsible for the condemnation of this operation. It is well enough known that considerable quantities of blood may be absorbed from the peritoneal cavity without serious symptoms. The writer has broken up adhesions in the manner indicated, in a very large number of cases, and has never seen any serious results.

4. "It is often necessary to open the canal of Nuck in order to find the round ligament, and this procedure must be considered as attended with nearly as much risk of life as opening the abdominal cavity by a median incision."

This objection betrays decided ignorance on the part of the writer of the article as to the proper method of performing this operation. In more than three hundred cases I have never yet found it necessary to open the canal of Nuck to find the round ligament. Indeed I have never seen the canal of Nuck in a single case until after seizing the ligament and dragging it out, thus causing the peritoneum adherent about the ligament at the point of its entrance into the canal to form a pouch. The operation certainly involves the canal of Nuck in every case, as the ligament must be drawn out far enough so that the thick portion of the ligament, which lies within the abdominal cavity, is dragged up into the wound to furnish a basis for solid anchorage. The amount of risk attending this procedure depends upon the care taken with the technique of the operation as regards asepsis. In the cases upon which I have operated, I have never had a patient whose symptoms indicated any danger to life as the result of the operation, and have not lost a single patient.

The operation is practically extra-peritoneal when performed dexterously and by the proper method, and must be regarded as almost absolutely free from danger to life. Certainly the chief danger of the operation lies in the employment of the anæsthetic, and even this small risk can be obviated in a majority

of cases. In nearly fifty cases I have performed the operation under the influence of cocaine, and find this to serve very well as an anæsthetic. The existence of an occasional case in which there is an idiosyncrasy against this drug, has led me to employ ether in its stead, in a majority of cases, but I would not hesitate, in any case, to undertake the operation with cocaine alone, so slight is the amount of injury to the tissues involved in it. The average mortality from abdominal section is still about ten per cent when the results of all operators are considered, although Tait and a few other operators have reduced the mortality to as low as three per cent. The writer's present record is two and one half per cent mortality only in 305 cases of operation for removal of the appendages, and including nearly fifty tumors, 172 cases of removal of diseased appendages without a single death. This record has been made within the last five years, since the adoption of more perfect methods in the preparation and after-care of the patient and in the technique of the operation. Nevertheless, small as is this mortality rate, I would not think of recommending a woman suffering from uncomplicated retroversion to submit to a laparotomy for the purpose of ventral fixation, so long as the operation of shortening the round ligaments is available.

Of course, in cases in which adhesions exist which are too firm to be broken up by bi-manual manipulation, the abdominal cavity must be opened for the purpose. Adhesions of the uterus are usually a complication of a diseased condition of which the ovaries or tubes are the primary seat, and hence an operation for the removal of these appendages is often necessary to insure the patient against a recurrence of the inflammatory conditions to which the adhesions are due. In such a case the appendages may be removed and the ligaments shortened at the same operation. It has been my practice for years to shorten the ligaments after removal of the appendages in cases in which a decided retroversion is present, the uterus showing an obstinate tendency to return to the hollow of the sacrum. Not infrequently, as is well known, the shortening of the broad ligaments due to removal of the appendages suffices to retain the uterus in its normal

position until its weight is so reduced by the atrophic processes introduced by the menopause, that its position in the pelvis becomes a matter of indifference. I have never seen any ill effects whatever from the combination of the two operations, removal of the appendages and shortening of the ligaments. It is only necessary to avoid making such traction upon the ligaments as to interfere with the pedicle to insure against any accident. I always complete the operation upon the ligaments before closing up the abdominal cavity. The operation upon the ligaments rarely ever occupies more than eight to twelve minutes for both, and so does not seriously prolong the operation. By my method I find that I can perform an operation upon the ligaments much more quickly than the operation can be done by any of the intra-abdominal methods proposed. I have frequently completed the operation entirely upon both sides in six or eight minutes, and in one instance in five minutes.

5. "*The exaggerated anterior position of the uterus after Alexander's operation is lower in the pelvis than after the operation by ventral fixation, causes more pressure on the bladder, and often produces vesical tenesmus with burning and stinging pain.*"

This objection is due to an incorrect understanding of the normal relation of the ligaments and the uterus. It is impossible for the pathological state known as anteversion to be produced by this operation. In anteversion the uterus falls forward to such a degree that the fundus lies below the level of the internal inguinal ring, so that by shortening the ligaments the fundus is lifted upward to nearly its normal position. Several years ago I performed the operation of shortening the ligaments for the purpose of relieving a severe case of anteversion, and was completely successful. This statement will not be appreciated by one who has not performed the operation of shortening the ligaments in connection with a laparotomy, or has not had the opportunity of performing a laparotomy in a case in which the operation of shortening the ligaments had been previously performed. I have had both these opportunities, and have never yet found the bladder so compressed by the uterus that its functions were to any degree interfered with. The bladder symptoms of which patients sometimes complain after operations, though

very rarely, I believe to be due, not to pressure of the uterus upon the bladder, but to a reflex nervous disturbance, the origin of which is either in the ovaries or in the nerves of the ligament, which are, of course, entangled and compressed in the wound. This pain always disappears in time, usually in a very short time after the operation, and it is very rarely present. It has not appeared in more than four or five per cent of the cases in which I have operated. In cases in which extensive incisions are made, and in which suppuration occurs, resulting in a large amount of contracting cicatricial tissue, it is quite likely that this troublesome symptom may occur quite frequently.

6. Winckel's objection to Alexander's operation is, "*That the chief cause of the relaxation of the retractors (vaginal ligaments) is not corrected.*"

I wish it to be distinctly understood that I am not defending Alexander's operation, but simply the shortening of the round ligaments, and this operation, as performed by my own method, or some analogous method. Nevertheless, I am prepared to admit that this operation does not in itself remove, directly, any of the primary causes to which retroversion is due, except in those cases in which the retroversion may be due to a sub-involution of the round ligaments following parturition, which I believe is sometimes the case. All that is accomplished by the operation upon the round ligaments is to restore the uterus to its normal position by tilting the fundus forward and thus giving it a new chance to remain in position, if it can. It is of course necessary to remove, so far as possible, the causes of the retroversion. These consist not simply in a relaxation of the vaginal ligaments. This in many cases, probably in a majority of cases, is only a consequence and not the cause of the retro-displacement.

In nearly all cases of retro-displacements, there will be found a weak and relaxed condition of the abdominal muscles, a prolapse of the bowels and stomach, a movable right kidney, in fact a general weakened state which Glenard has termed enteroptosis. The displacement of the pelvic viscera is only one element in the general disarrangement of the static relations of all the organs contained in the lower cavity of the trunk. To perform the operation of shortening the round

ligaments without giving attention to the removal of these morbid conditions, is the height of absurdity. There are, of course, exceptional cases in which the displacement may be due to some accident, as a fall, a strain, or some complication following parturition, but these cases are exceptional. In these few exceptional cases the operation alone may be sufficient to effect a cure, but in the great majority of cases which require the performance of this operation, the patient must be subjected to a long and thorough course of treatment subsequent to the operation, in order to insure good results. The measures most essential are those which consist in replacement of all the displaced viscera of the abdomen, and which will strengthen the abdominal walls so as to support these organs in their normal position, and thus remove the abnormal weight resting upon the organs of the pelvis. Massage administered by one skilled in this particular kind of manipulation, the application of electricity, especially the employment of the sinusoidal current with slow alternations, Swedish gymnastics, manual Swedish movements, and general exercise, are indispensable in the after-treatment of these cases. I have recommended bicycle riding with great advantage to quite a number of patients upon whom I have performed this operation, and they have ridden themselves into robust health. A woman whose abdominal muscles are so weak that they yield to pressure of the hand like a sack of cloth with soft contents, must have the protection of a perfectly adjusted abdominal bandage, which should be applied immediately after the operation, and should be worn until the abdominal muscles have acquired sufficient strength to support the viscera in the proper position. In these cases a prolapsed condition of the viscera is indicated by a flat or furrowed waist and a protruding lower abdomen. The weight of the abdominal viscera must be taken off the pelvic organs, or no operative procedure of any sort will be found effectual. A pessary must be worn in most cases until the abdominal muscles are properly developed.

7. "The advantages of ventral fixation over the Alexander method are: Adhesions can be overcome under direct inspection, and the danger of haematocele prevented."

As we have already seen, this is not an

argument against shortening the round ligaments. It is only an argument in favor of opening the abdomen in breaking up adhesions, instead of breaking up adhesions by abdominal manipulation without opening the abdomen. There are certainly many cases in which adhesions can be broken up with perfect ease and perfect safety without performing an abdominal section. Every gynecologist of long experience will testify to this fact. It must be considered bad teaching that the abdomen should be opened whenever there are adhesions to be broken up.

8. In the operation of ventral fixation, "*there is more room for distention of the bladder, and there is no complaint of burning, stinging pains or dragging sensations.*"

A leading Eastern surgeon stated before the Section of Gynecology at the Washington meeting of the American Medical Association, that he had much less enthusiasm for the operation of ventral fixation than he had formerly expressed in papers upon the subject. He had found that the weight of the uterus dragged down the abdominal wall and produced great discomfort. There are certainly ample reasons why these symptoms should be more prominent after ventral fixation than after the operation of shortening the ligaments, for the reason that the ligaments are the natural structures for suspension of the uterus; they support it in a natural position and in a natural way; the traction falls upon tissues which are accustomed to bear it. The interference with the bladder must certainly be much less, since the fundus of the bladder is left free to extend upward without restriction, whereas, in the operation of ventral fixation, the upward extension of the bladder is interfered with, the viscous being allowed to expand only in lateral directions and in an unnatural manner. If the abdominal walls are relaxed, the uterus will settle down as low as ever, dragging the weakened abdominal walls after it. In many cases the recti muscles are so separated that there is no strength whatever in the central portion of the abdominal walls.

An experiment which I usually make in examining a gynecological patient, is to have the patient while lying upon the table raise the head by voluntary contraction of the muscles of the neck. Simul-

taneously with contraction of the neck muscles the recti and other abdominal muscles also contract, and if the patient is made to raise the head as high as possible, the contraction of the abdominal muscles will be as great as the patient is able to execute. While the muscles are thus contracted, the ends of the fingers are placed on the median line and pressed inward. By this means any considerable weakening of the abdominal wall by separation of the recti muscles, is readily appreciated. Not infrequently I am able to pass the fingers down to the posterior wall of the abdomen with perfect ease, finding the recti separated, in many cases, to the extent of two or three inches. It will be readily seen that the attachment of the fundus uterus to such a yielding structure as this relaxed abdominal wall, will be to secure it to a very uncertain anchorage. This condition is present in a large proportion of cases in which ventral fixation would be recommended by those who favor this mode of operation.

9. "*The objection to opening the abdominal cavity is to-day almost nothing; . . . and there is no preference on this account for one operation over the other."*"

I can account for this statement only upon the supposition that the writer of the article above referred to has based his opinion of the mortality of the operation of shortening the ligaments upon the results obtained by those who have employed faulty and clumsy methods, and have consequently met with disastrous results. As already stated, I have had no fatal cases, and can see no reason why one should ever lose a patient from this cause. I have had the good fortune to make an extraordinarily good record with my abdominal sections, nevertheless I would not think of placing these two operations on the same plane as regards mortality. A mortality rate even of one or two per cent is by no means a trifling matter. No woman would care to stand in a row with ninety-nine other women and allow herself to be shot at in a random way with the knowledge that one of the hundred only would be hit by the bullet, but a certainty that that one would fall. Such a position would rightly be considered a very dangerous one. Comparing our improved statistics with the fearful mortality which attended the operations of the surgeons of a quarter of

a century ago, when aseptic methods were unknown, we are too apt to look lightly upon the risk involved in an operation with a mortality rate of only two or three per cent. We are apt also to forget that in recommending an operation we may be basing our conclusions upon the results obtained by operators possessed of extraordinary skill and a vast experience, whereas, if we should present the entire statistics of the operation, including the results obtained by amateur and inexpert operators, we should be compelled to present a very different picture as regards its safety.

In conclusion: I am glad to note the candor with which the writer presents the facts relating to the two operations, as bearing upon the question of child-bearing. I also wish to say that I do not stand in the position of discountenancing ventral fixation as a proper surgical operation. I have performed this operation a dozen times or more in cases in which it seemed to be suitable. The cases in which I have performed the operation include the following classes:—

1. All were cases in which the appendages had been removed.
2. Several were cases in which there had been extensive adhesions, and the great weight of the uterus gave good reason for fear that it would settle back into its position in the hollow of the sacrum in spite of the aid of the round ligaments in holding it forward, before atrophic changes had taken place, or sufficient improvement occurred in the supporting power of the abdominal walls to prevent recurrence of the displacement.

3. In several cases there was sharp retroflexion of the organ, which rendered it probable that the top of the fundus would turn back over the pessary, thus rendering necessary the introduction of an intra-uterine stem to make the operation successful. I consider ventral fixation preferable in such a case to the wearing of an intra-uterine stem.

4. There are certain cases to which the operation of ventral fixation is adapted, and in which it possesses advantages over the operation for shortening the round ligaments. In these cases, the operation is a perfectly proper and even a necessary procedure. Nevertheless, there is a large class of cases in which the performance of this operation could hardly be considered advisable, and for

the relief of which it is not so well suited. These cases may be relieved by the operation of shortening the round ligaments, which is, in itself, a very slight operation, in a majority of cases, leaving behind, after the lapse of a few months, no trace,—often not even the slightest scar can be found without the most minute examination,—and placing the woman in practically the same condition in which she would have been if she had never suffered a displacement, and there is no danger of the ventral hernia which sometimes follows the operation of abdominal section.

In most cases in which I have performed the operation of ventral fixation, I have also shortened the round ligaments, and believe this to be a proper procedure, and in fact, from my present standpoint I would not think of performing the operation of ventral fixation without also shortening the ligaments, except in cases in which the operation is performed in connection with removal of the appendages, and with the expectation that within a few months at most the atrophic changes which follow this operation will have so reduced the size of the organ that its position in the pelvis will become a matter of little or no consequence.

There is much more to be said upon this subject, but I forbear for the present, having in preparation a paper in which I shall present the results, in all the cases upon which I have performed the operation, sufficient time having elapsed to enable me to determine what the permanent results are likely to be. I may briefly summarize the advantages of the operation of shortening the round ligaments, when properly performed, as follows:—

1. It supports the organ in a natural way, the traction falling upon the parts accustomed to it and able to bear it, being closely connected with the bony walls of the pelvis, instead of upon the yielding structures at the median line.

2. The operation is a safe one; the mortality is nothing.

3. The operation involves no mutilation, no conspicuous cicatrix, no considerable amount of suffering, and has nothing about it of a frightful or repulsive nature.

4. The time required for the operation, when a proper method is employed, is

only five to fifteen minutes, according to the skill and experience of the operator, so that the patient is but a short time under the influence of the anæsthetic, involving very little risk of ill consequences from this cause.

5. The operation is successful. I have had opportunity within the last six months to examine a number of patients upon whom I performed the operation five and six years ago, and I found the position of the uterus to be perfectly normal. In a very small percentage of cases only has the operation proved a failure in my hands. The failures have been less than five per cent of the entire number of patients operated upon, and in these cases failure was due, not to any defect in the operation, but to the fact that the patients were either unable or unwilling to undergo the necessary treatment following the operation, to remove the primary causes to which the retroversion was due, consequently the disease returned just as it came in the first place. It is, of course, impossible to make a woman better than she was originally, nevertheless the operation for shortening the round ligaments comes as near to accomplishing this object as it is possible to do. Suspension of the uterus by its top, from the median line of the abdominal wall, is altogether an unnatural proceeding.

I feel confident that any one who will carefully investigate the improved method of performing this operation, and will carefully inquire into the results which are obtained by it, will be thoroughly convinced of its utility, and will not hesitate to pronounce it vastly superior to ventral fixation or any other method which has been suggested for the radical cure of retroversion. I have had the pleasure of exhibiting my method of performing the operation to scores of able physicians, and have not yet found one who did not give it unqualified commendation. It has been adopted by a number of surgeons, and they have reported results equally satisfactory with my own.

Ice in Asthma.—One of the best means of relieving the spasm of the small tubes present in asthma, is the application of ice over the region of the pneumogastric nerve in the neck. Severe attacks are often relieved in five or ten minutes.

SIR ANDREW CLARK — A REMINISCENCE.

BY FRANCES E. WILLARD.

THIS chief among the great physicians of London has just passed away in the sixty-seventh year of his age. He was Tennyson's physician and Gladstone's; indeed, so great was his fame, that when, two weeks ago, he was stricken with paralysis, seven hundred messages of inquiry came to his family in a few hours. He was a small, slight man, of what we call the wiry type, and a remarkable illustration of what "mind cure" can do for a person who is determined to live whether or no. It is said that forty years ago, when he sought admission as a physician in one of the London hospitals, the choice fell upon him in preference to a number of equally eager aspirants, on the basis that he was "a delicate little fellow, and would not live long anyway." He was condemned to death in his youth by the verdict of physicians, but eluded the same by a novel process,—he flung himself into the hardest kind of work, paying no attention to his fears, but concentrated his forces altogether on his hopes.

When I went to see him, he extended a hand white as a lady's and soft as velvet, and in a voice that matched his hand went into a most careful diagnosis of my case; beginning with heredity and ending with the last morsel I had tasted that morning, he followed me through every lane of life, ancestral and individual; carefully examined my lungs and heart, saying (I think this was part of his mind-cure process), "Beautiful lungs, beautiful heart, no organic difficulty, overwork, nervous exhaustion. What you need is rest, pure air, cheerful companions, simple diet, and no end of outdoors."

His manner was most reassuring, and had in it a tender considerateness hardly to be expressed. When he asked to take the pulse or see the tongue, he prefaced the request with the words, "My dear patient." It was apparent that not only great skill and high character, but a most fortunate manner, were the essentials of his success. He prescribed no medicine whatever, saying that he thought very little of it, and that old Mother Nature was the only true physician, and gave me

some simple rules which seem to me so good that I have had them copied for the benefit of any who may care to profit by the wisdom of a man both great and good, and a physician of unrivaled fame.

At my request, he wrote down three aphorisms that he had used during our interview: "Labor is the life of life;" "Ease is the way to disease;" "The highest life of an organ lies in the fullest discharge of its functions." Here follow what he called his "temporary general instructions":—

"On first waking in the morning, sip about half a pint of water, cold or hot; on rising, take a tepid sponge bath, followed by a brisk general toweling. Clothe warmly and loosely. Avoid chills, damp, and passive exposure to cold. Take three simple, nourishing meals daily, and nothing between them. Breakfast at eight or nine: plain or whole-meal bread, or toast and butter with eggs, or fresh fish or cold chicken or game or tongue, fresh, not preserved, and toward the close of the meal about half a pint of tea not infused over five minutes, or of cocoatina, or of coffee and milk.

"Dinner from one to two o'clock: fresh, well-dressed meat, bread, potato, some well-boiled green vegetable, if it agrees, and either some simple farinaceous pudding or some simply cooked fruit. Toward the close of the meal, drink water.

"High tea, five to six hours after dinner: whole-meal bread or toast and butter, with broiled fish or cutlets, or a chop, or cold meat, or cold chicken, and toward the close of the meal, about half a pint of Black China tea, not infused over five minutes; cocoatina or cocoanibs may be substituted for tea, if it is preferred and if it agrees.

"Nothing after this meal except that on going to bed you may sip a tumblerful of water hot or cold.

"Avoid soups, sauces, pickles, spices, curries; salted, smoked, tinned, or otherwise preserved foods; pies, pastry, cheese, creams, ices, jams, dried fruits, nuts, raw vegetables, compotes, confectionery, malt liquors, cider, lemonade, ginger beer, much liquid of any sort, and all sweet, sour, and effervescent drinks.

"Walk at least half an hour twice daily.

"Retire as soon as possible after ten. See that your room is airy. Avoid self-

notice and self-distrust. Shun ease, and lead a full and regular, an active and an occupied life.

"Whenever you have to speak at night, be sure to lie down for an hour before tea.

"Take nothing between meals.

"Never take a sleeping draught.

"Take as little medicine as possible; accept your sufferings; strength is perfected in weakness; in labor you will find life. If you are terribly run down some time, go away for a fortnight's rest.

Bank Bill Microbe.—Acosta and an associate have found bank bills infected with microbes to the extent of many millions on every bill which has been in circulation for any length of time.

RELATION OF MODERN PHYSIOLOGICAL CHEMISTRY TO VEGETARIANISM.

BY J. H. KELLOGG, M. D.

FOR nearly half a century there has been considerable popular agitation upon the question of a fruit-and-grain diet as opposed to a flesh dietary for human beings. Pythagoras, Socrates, Plato, Solon, and other ancient philosophers, as well as Byron, Pope, Gay, and some other modern poets, together with Cuvier, Bell, and Humboldt, among the most distinguished of modern naturalists, have been advocates of a non-flesh diet, while Buddha the great religious reformer of the East, whose teachings are to-day revered by a larger number of persons than those of any other, ancient or modern, made abstinence from flesh diet a part of his religious creed. The same is true of many of the "Fathers" of the early Christian church. These facts have led many of the laity to adopt a non-flesh diet as the most natural and wholesome dietary for man, and have furnished the basis for a quite active propaganda of vegetarian doctrines, especially within the last few years. Dujardin-Beaumetz, a leading French physician, and Bouchard, eminent as one of the most distinguished of modern physiologists and pathologists, have within recent years given their strong adherence to the doctrines of vegetarianism, especially as a therapeutic measure; while Bonnejoy, a French physician of some prominence, has written enthusias-

tically in favor of a non-flesh diet, as best fitted for the maintenance of health and the attainment of the greatest longevity for all classes. Modern interest in the subject has led the writer to undertake some studies with special reference to the scientific grounds upon which the claims of vegetarianism may be based, and especially their relation to the doctrines of physiology, chemistry, and bacteriology.

The researches of Liebig, Lehmann, Claude-Bernard, and especially those of Brieger, Gautier, and other recent explorers in the mine of physiological chemistry, have developed a vast fund of novel and interesting facts which have a most important bearing upon practical dietetics, and especially upon the question of the consumption of animal flesh as food. As the result of these laborious and painstaking laboratory studies, a remarkable fact has been developed,—that the animal body is a manufactory of poisons. The production of CO_2 , urea, and a few other poisons, has long been known, and the modes of their production and elimination have been carefully studied; but it has remained for the present generation of physiological chemists to discover the fact that the poisons named, and others which have long been known, are comparatively non-toxic and harmless when contrasted with any one of a multitude of newly discovered bodies which are found to pervade the tissues of all classes of animals.

Brown-Sequard discovered, some years ago, in the breath of human beings and other animals, a poison which in the most minute doses produces deadly effects upon lower animals, a fact which I saw experimentally demonstrated by Prof. Brown-Sequard in his laboratory in Paris a few years ago.

Bouchard, another French physiologist and chemist, has within a few years demonstrated the presence in the urinary secretions of human beings, as well as of lower animals, of half a dozen most deadly alkaloids in addition to the urea, uric acid, and other less toxic bodies previously known. One of the poisons in most minute doses produces death with violent spasms; another causes rapid fall of temperature until death occurs; another influences animal temperature in the opposite direction; still another produces death with most profound coma. These substances are so small

in quantity that they are not discoverable by any of the means employed in ordinary chemical analysis of the urine, but their presence and deadly properties are quickly demonstrated, as shown by Bouchard, by the injection of a small quantity of urine into the veins of a rabbit or other small animal.

As Bouchard and other investigators have clearly shown, the urine may be considered as an extract of the tissues, constituting the residuum resulting from the vital work of the body. The kidneys do not manufacture poisons *de novo*, but simply separate from the blood, poisons found in solution therein, which have been washed by the blood current from the tissues which it bathes in passing through the capillary network of the systemic circulation. Taking this fact for a starting point, Bouchard has formulated a new method of investigating the poison-making and poison-eliminating functions of the body. The method consists of the following procedure:—

The person or animal to be studied is carefully weighed, and the urine is collected for twenty-four hours, accurately measured, rendered neutral, and filtered. A live rabbit is provided and carefully weighed. By means of a suitable injecting apparatus the prepared urine is slowly introduced into one of the veins of the ear of the rabbit until the animal dies. The symptoms produced are carefully noted in the order of their occurrence, and also the exact amount of urine required to produce death. The symptoms observed give a clue to the nature of the poison which is dominant in the urine and consequently in the tissues of the person or animal investigated. By dividing the amount of urine required to produce death by the weight of the rabbit, the amount of urine required to kill a definite amount of living being is readily obtained; and by dividing the total quantity of urine for twenty-four hours by the amount required to kill a kilogram of living being, a figure is obtained which represents the total poisoning capacity of the individual for twenty-four hours; or, in other words, the weight of living being which may be killed by the total amount of poison produced by the individual for twenty-four hours. Dividing this last figure by the weight of the individual under investigation, we obtain what is aptly termed by Bouchard, the

urotoxic coefficient, a figure which represents the weight of living being which would be killed by the amount of poison produced for twenty-four hours by a single kilogram of the person or animal investigated.

This method of investigating the toxicity or poisoning property of the urine has been described in detail on account of the use which has been made of it in the investigation to which I shall refer later in this paper. The investigation is one which requires the death of an animal for each specimen of urine investigated, but, fortunately, the animal yields its life without pain or suffering greater than would be produced by ether, chloroform, or any other anæsthetic, the coma-producing poison always being present in sufficient quantity to benumb the animal's sensibility and give it a painless death.

A great number of exceedingly interesting facts have been discovered through the study of this method of investigating urinary and tissue toxicity, although the method has thus far been employed only in special laboratories fitted up for physiological investigations.

As has been remarked, the body is a factory of poisons. The amount of poisons produced in the body and the extremely poisonous nature of these substances may be inferred from the rapidity with which death occurs when there is any serious interruption in the process of poison elimination. For example, suppression of the action of the kidneys results in death within a little more than forty-eight hours from the accumulation within the body of the poisons which it is the special duty of the kidneys to eliminate. Interruption of the normal activity of the skin in poison elimination, by the application of a coating of varnish, produces death in a few hours with a notable fall of temperature—the result not of an increase of radiation, as was formerly supposed, but by the accumulation in the body of the temperature-lowering poison discovered by Bouchard. Interruption of the action of the lungs results in death within a few minutes, not directly because the supply of oxygen is cut off, but because of the failure of the lungs to expel from the body the deadly toxic substance which Brown-Sequard has demonstrated to be a constant constituent of the breath.

(To be continued.)

TRANSLATIONS AND ABSTRACTS

[THE articles in this department are prepared expressly for this journal.]

THE TREATMENT OF ACUTE ARTICULAR RHEUMATISM.

BY PROF. DUJARDIN-BEAUMETZ, OF PARIS.

[Translated for MODERN MEDICINE from the "Bulletin de Therapeutique," by J. H. Kellogg, M. D.]

CHOMEL said, forty years ago, "If a medicine can be found which, in the treatment of thirty or forty patients suffering from rheumatic fever, secures a cure in an average of fourteen days, there will be no room to doubt the efficacy of the remedy. For a long time, alas, such a remedy has been sought, but it is still to be found."

E. Besnier, in a remarkable article published in the "Dictionnaire Encyclopédique," twenty years ago, expressed himself thus: "In the present state of science we are not able to say that we have an anti-rheumatic remedy in the proper sense of the term. We have only some therapeutic agents applicable to rheumatism, according to the general and common rules of therapeutics."

To-day science declares that salicylate of soda constitutes a specific remedy for acute articular rheumatism, and to such a degree that, as Faisans has remarked, "the failure of this remedy should give rise to a doubt of the correctness of diagnosis."

When Stricker, in 1876, first recommended salicylic acid in the treatment of acute articular rheumatism, he was guided solely by empiricism. There was at that period a theory of the infectious origin of rheumatism, but I believe it was of no aid to Stricker. This theory was that of Hueter, who held that the infectious agents penetrated the blood by the sudoriferous ducts and produced infectious emboli.

Stricker in 1874 had completed the theory of Hueter by finding monads or monadins in emboli, such as were described by Hueter, but it was rather by the analogy of salicylic acid with phenol, that Stricker employed salicylic acid, which he considered an antithermic.

Vulpian, in an article which he devoted to the study of the action of salicylate of

soda in acute articular rheumatism, made no mention as to its antiseptic action, but claimed only analgesic effects upon the articulations special to this remedy. Since this time, researches with reference to the nature of articular rheumatism have been greatly multiplied. One of the most recent and most remarkable is the thesis of Dr. L. de Saint-Germain.

At the outset, acute articular rheumatism and its manifestations must be clearly separated from pseudo-rheumatism and chronic rheumatism. As regards pseudo-rheumatisms, they are quite unanimously considered to be articular manifestations due to pathogenic microbes of various origin,—the gonococcus of gonorrhœa, microbes of scarlet fever, the staphylococcus of purulent infection, etc.

As regards chronic rheumatism, it has been classed in another group of maladies, and in recent medical works,—those of Bouchard, Charcot, and Debove,—while acute articular rheumatism is placed among infectious maladies, chronic rheumatism is to be found in another volume and in connection with maladies of nutrition.

In its clinical history, acute muscular rheumatism is manifestly an infectious malady. It has a cyclical mode of development. The temperature has a characteristic curve. Its manifestations are very specific, and it may be added that if it were contagious, there would be no doubt as to its infectious nature. This is the only characteristic which it lacks.

The clinical facts relating to rheumatism are absolutely confirmed by therapeutics, as much by the remedies formerly employed with success as by those which are in use to-day. What were the heroic remedies for rheumatism? — They were blood letting and the sulphate of quinine. When, more than fifty years ago, Bouillaud joined in a single group the divers and changeable manifestations of articular rheumatism, he recommended an anti-phlogistic plan of treatment, in which blood letting was a prominent feature; but blood letting is at the foundation, an antiseptic remedy. In withdrawing a great quantity of the blood by rapid bleeding, the morbid principles in the blood are also removed. Certain bacteriologists maintain that the micro-organisms peculiar to rheumatism develop exclusively in the blood. The

administration of sulphate of quinine which gave, before the employment of salicylate of soda, more constant results than any other remedy, acts more as an antiseptic than as an antipyretic. However, when Vinay devoted, in 1841, his inaugural thesis to the therapeutics of rheumatism, it was with the view of combating the fever that he recommended the use of sulphate of quinine in large doses.

All the other remedies belonging to the analgesic and antithermic series, as well as salicylic acid, have been utilized with success in rheumatism, because all of these remedies possess to some degree undoubted antiseptic properties.

We see, then, that clinical observation and therapeutics are in accord in placing acute articular rheumatism in the group of infectious maladies. The greatest confusion exists, however, among bacteriologists who have studied this question. While some find special pathogenic microbes, others recognize only common microbes.

Klebs encountered monads especially in lesions of the endocardium.

Wilson recognized effusions in the pericardium, a special microbe which Mautle also found in articular effusions accompanied by bacteria and a small bacillus.

Popoff has also found micrococci in the blood of persons suffering from acute articular rheumatism.

In France, G. Lion found in three cases of acute articular rheumatism, a double-pointed micrococcus. Finally, Troisier has discovered an anaërobic microbe in a case of cerebral rheumatism.

All these researches, by the multiplicity of microbes discovered on the one hand, by the rarity of the cases in which they have been found on the other hand, indicate that we are not clearly settled as to the existence of a special microbe in rheumatism.

Other observers, as Guttmann, for example, Sahli, Bouchard, Charrin, and Triboulet, have found staphylococci in visceral and articular effusions in certain cases of rheumatism. But these staphylococci exhibit nothing peculiar to this disease.

I will add that the researches undertaken by L. de Saint-Germain, have produced only negative results, so that up to the present time it must be said that the

pathological agent of rheumatism has not been isolated.

The disagreement which seems to exist between the facts furnished by clinical observers and by therapeutics, and those which result from bacteriological researches, has led to many different hypotheses more or less ingenious, which have been offered to explain this apparent disagreement.

Thus, Friedlander has supported the opinion that the pathological agent in rheumatism confines itself to the spinal cord and certain branches of the nervous system. We shall see that if this explanation appears little plausible in relation to acute articular rheumatism, it is on the contrary very applicable to chronic rheumatism, which manifestly in certain cases, behaves like a disorder due to disease of the spinal cord.

Other authors have regarded rheumatism as one of the manifestations of septicæmia, a result from septic microbes. This is the opinion of Germain Sée, of Bordas and Triboulet. Based upon the fact that staphylococcus pyogenes develops with extreme rapidity in the synovial articulations, this hypothesis is supported by experiments undertaken by L. de Saint-Germain. It explains well the pseudo-rheumatism which is developed in the course of septic infectious maladies, but I believe is little applicable to true acute articular rheumatism.

It appears, then, that bacteriology has not supported the observations of clinicians and therapeutists. Certainly there are many eruptive fevers, with smallpox at the head of the list, a type the most complete of an infectious and contagious malady, in which bacteriology has shown itself incapable of isolating the pathogenic agent. Then in spite of the discord, we shall continue to consider rheumatism as a disease essentially infectious in character. It may be remarked incidentally, that while appreciating the high value of the facts furnished by bacteriological researches, they are of secondary importance to clinical observations, and we have in rheumatism an example of this fact. It is not only necessary to know that we possess a specific remedy for acute articular rheumatism; it is also important to know how to apply this remedy in order to obtain the best results. The use of salicylic acid first proposed by Stricker has been aban-

doned. It is generally badly borne by the stomach. Salicine, proposed by Mac-lagan in 1876, has also been rejected. Preference is usually given to salicylate of soda, brought out by G. Sée in 1877.

There is also general agreement as regards the dose to be administered. The physicians of Paris appear to be unanimous in giving the remedy in solution, dividing the doses as much as possible. The size of the dose is proportioned to the intensity of the rheumatism and its resistance to treatment. The minimum dose is 4 grams (1 dram) in 24 hours. In very acute cases, even 8 or 10 grams (2 to 2½ drams) may be administered in 24 hours. For myself I employ the following solution :—

Salicylate of soda.....	15 grams (230 gr.)
Aqua.....	250 " (8 ozs.)

I give 4 to 8 tablespoonfuls of this solution in 24 hours, in a little sweetened water. Salicylate of soda has a nauseating and a very disagreeable taste. When I give only 4 grams, I administer the mixture every 4 hours. When I give 8 grams per day, the dose is given every 2 hours. Generally when administered in this form, and in doses thus divided, salicylate of soda is well borne, and when the quantity administered in 24 hours does not exceed 8 grams, there is no perceptible disturbance of the aural function. Possibly the patient may observe a sensation as of wind in the ear. For dyspeptics and those who have very delicate stomachs, salicylate of soda is sometimes badly borne, even when in a state of great dilution. The remedy may then be administered by rectum. In some experiments undertaken by Lemanski, upon rectal absorption, it was demonstrated that while in the adult it requires 20 minutes for salicylate of soda administered by the mouth to appear in the urine, a quarter of an hour is sufficient when the drug is administered by the rectum. In all cases it is well to facilitate diuresis and thereby the elimination of the salicylic acid by administering diuretic drinks to patients submitted to this treatment. The best diuretic remedy is milk. When the dose of salicylate of soda exceeds 8 grams (2 drams), the milk regimen becomes absolutely necessary. Constantin Paul and Labbe prefer the alkaline mineral waters.

Even when the rheumatism has disappeared, I continue the administration of

the remedy for twelve days, and sometimes during three weeks, in the diminished dose of 2 to 4 grams (30 to 60 grains) daily. When the drug is too suddenly withdrawn, relapses occur. This is, in fact, almost a constant rule, and these relapses yield less readily to the salicylic acid than the first attack.

I do not believe that the salicylate of soda jugulates rheumatism. *In principle I am opposed to jugulating disease. The salicylate of soda masks the development, but the rheumatism remains active; for if the drug is withdrawn, the disease reappears.* If employed from the beginning of the disease, salicylate of soda prevents the complications of rheumatism, consequently we to-day see much more rarely than formerly, cardiac complications of rheumatism.—It may be affirmed that in a certain number of years when the employment of salicylate of soda has become general, affections of the heart will become more and more rare. Is salicylate of soda capable of curing all cases of rheumatism?—Yes, in the great majority of cases, and it may be said that the exception confirms the rule. I have seen, however, certain cases of rheumatism exhibiting all the characteristics of true acute articular rheumatism, which resisted the salicylate of soda even when administered in very large doses. In these cases I believe there exists some disease of the spinal cord; but such cases are very exceptional.

From the beginning of the employment of salicylic treatment, it has been observed that while some patients tolerate easily and without inconvenience, large doses of salicylates, there are others, on the contrary, in whom there exists an almost complete intolerance. In these cases there appear rapidly, intestinal disorders or cerebral troubles which may extend even to delirium. These disorders are to-day well understood. As regards gastro-intestinal disturbances, I know a person who cannot support even the smallest doses of salicylate of soda without suffering from an extremely profuse diarrhoea.

Bouchard recently reported toxic phenomena in a patient by a little more than 2 grams (½ dram) of salicylate of soda; but such cases are very rare.

As regards cerebral troubles, salicylic acid is one of those drugs which acts upon the upper part of the cord, upon

the bulb, and upon the brain, and produces, as does sulphate of quinine, tinnitus aurium and deafness, when the dose equals 8 to 10 grams (2 to 2½ drams) in 24 hours.

We know to-day the cause of these intolerances. There is a great law of general therapeutics which requires that all active substances in order to produce medicinal effects, after having reached that point of the cerebral cortex where their effects are produced, must be promptly eliminated by the different excretory organs, especially by the kidneys. If this elimination does not take place with sufficient rapidity, the therapeutic effects give place to toxic effects.

Salicylic acid is not an exception to this law. It affords, on the contrary, a striking confirmation of it. This body is also admirably adapted to researches of this sort by reason of the readiness with which the most infinitely small traces of the drug may be discovered in the urine, by means of the purple reaction produced by perchloride of iron.

In a thesis by one of my students, Mlle. Dr. Chopin, we have established the law which regulates this elimination of salicylic acid in a state of salicyluric acid. The more permeable the kidney, the more prompt the elimination. In infancy and in adolescence, salicyluric acid may be found in the urine at the end of twenty minutes, while in old persons and patients suffering from renal disorders, elimination is much slower, beginning only twenty-four to forty-eight hours after the administration of the drug, and continuing during three or four days. From these facts are derived several very interesting points respecting the medical use of salicylic acid. In infants, the drug is admirably supported, thanks to the renal activity. Jules Simon recently insisted upon this point, and stated that in the infant the dose of 3 to 3½ grams in 24 hours may be administered by beginning with 50 centigrams (8 grains) and increasing the dose by 50 centigrams each day. On the contrary, in dealing with persons of more advanced age, and especially with very aged persons, it is necessary to use extreme caution in the administration of salicylate of soda.

In persons suffering from renal disease, with marked disturbance of elimination, no matter what the origin of the disease may be, it is best before administering

salicylic acid to make an examination of the urine, and if any signs of intestinal or catarrhal nephritis are found, the remedy must be discarded.

Finally, it appears to be settled that salicylic acid produces contractions in the gravid uterus, hence it may be capable of producing abortion. Although we are in possession of no clinical facts with relation to this point, it is necessary to recognize it. Authors seem not to have recognized the bearing upon these cases of the renal congestion which is, so to speak, a rule in pregnant women. But whether in these cases we have a direct action upon the uterine muscular fiber or toxic effects, it is nevertheless clear that great prudence should be employed in the administration of salicylic acid during pregnancy.

These inconveniences have led to a search for substitutes for salicylic acid. All of those which have been discovered have been found in the great group of antithermic, analgesic remedies, at the head of which we must mention antipyrine.

Antipyrine is an excellent remedy in rheumatism, but in order that it should succeed, it is necessary that the intensity of the disease should not be great. It is especially useful in cases of painful rheumatism, muscular rheumatism, and light painful affections of the joints, for the reason that it can be administered in small doses. But when we are obliged to administer more than 4 grams in 24 hours, antipyrine produces serious symptoms, such as depression of temperature, profuse perspiration, and sometimes even eruptions.

We have also employed exalgine, which Bardet and myself introduced into therapeutics, but the inconveniences in the use of this remedy are still very serious. Still exalgine is an excellent analgesic; it is also toxic, even in feeble doses, and must always be used with prudence. I believe that all these inconveniences may be avoided by the use of a remedy which Stackler and I have studied for the last two years, under the name of asaprol. We have applied to therapeutics a soluble naphthol, which was discovered by R. Nietzki. It is a white powder without odor, with the sweetish bitter taste of the salicylates, and is extremely soluble in water and alcohol—100 parts of water dissolving 160 parts of asaprol. It is an

antiseptic body and only very slightly toxic. Introduced by way of the digestive canal, it may be said that in the rabbit at least, it is scarcely at all toxic, since we may administer 2½ grams (about 40 grains) per kilogram without producing symptoms of poisoning. This substance is eliminated in the state of ether-naphthol-sulphuric, and may be recognized by means of the perchloride of iron, which gives a pale blue discoloration. In man, asaprol is very well tolerated in doses of 3 to 10 grams. It induces neither digestive nor nervous disturbance. It lowers the temperature and pulse, but produces no skin eruptions or disturbance of the ears. The average dose is 4 to 6 grams (1 to 1½ drams) per day. It should be given in divided doses, and in the same way as the salicylate.

[Of twenty-one cases treated by asaprol, reported by Dujardin-Beaumetz, twelve were cured in three days or less. All had recovered at the end of seven days. While recognizing the value of salicylate of soda as a remedy in acute inflammatory rheumatism, the translator considers the therapeutics of this disease incomplete without giving attention to a few important hydropathic measures, and especially to the matter of regimen. Without going into details, the regimen of rheumatism and the necessary hydropathic measures may be summed up briefly as follows:—

Absolute rest in bed; abstinence from all solid food, the diet being confined to fruits and a moderate allowance of milk, say one or two pints in twenty-four hours; foods should be taken very sparingly during the whole term of the disease; complete abstinence for two or three days will hasten resolution; water should be taken very freely. As a rule water is the only diuretic required. My usual prescription is a glassful of water every hour. If the patient cannot conveniently drink so much, a quantity of water to be retained may be administered by enema two or three times a day. There is no difficulty in retaining one or two pints of water if the temperature is about that of the body, and if it is introduced slowly. The patient should be kept in a state of perspiration by fomentations to the spine, fomentations over the affected joints, and, if necessary, by means of the hot blanket pack. Great pains should be taken to avoid

chilling the patient. These measures alone are sufficient to effect a cure in many cases in a week or ten days, and amelioration usually begins soon after the treatment is instituted.—J. H. K.]

Ipecacuanha in Hemorrhage of the Stomach.—A writer in the London *Lancet* recently advocated the use of ipecacuanha in large doses (45 grains of fresh powder made into a bolus with glycerine, and a few drops of tincture of opium) as a remedy for hemorrhage of the stomach. The writer directs that after the administration of this dose, another full dose should be taken after a couple of hours, that the patient should rest quietly in bed, and that food should be administered by the rectum for several days. In three cases treated by this method, the patients have made rapid recovery. A question which might readily arise is whether recovery would not have occurred with the bodily and stomach rest, and rectal alimentation, without the ipecac.

Tumors.—There is no solid tumor that may not become malignant.

Although metamorphosis of benign into malignant tumors seems to be a well-established fact, the precise time of its beginning has not yet been determined.

A stage of benignity has been observed in most malignant tumors. This benign stage is often short, but it sometimes continues many years.

Potentially malignant tumors may, with great advantage, be excised during an early period of their stage of benignity.

Exclusive medicinal or local treatment of tumors can be of no service, and may be considered as indirectly harmful by preventing or delaying surgical treatment.

It is not necessary to make an accurate differential diagnosis of tumors until after their excision.

Accessible morbid growths should be excised as soon as discovered, however small or apparently harmless, because they are worse than useless to the human economy, because of their liability to be transformed into malignant tumors, and because no means are yet known by which to ascertain the exact time of the beginning of metamorphic action.

Recurring tumors should be excised as soon and as often as they appear, so long

as there is enough tissue for cicatrization. In some cases skin-grafting is of the greatest service.

Before excision of a malignant breast-tumor, the axilla should be cleared of all lymph-glands, and the last part of the operation should be the removal of the breast, together with the surrounding connective tissue and pectoral fascia.—
Dr. J. W. S. Gouley, in the Medical News.

application was renewed three times more, however, to insure a cure. The patient improved rapidly, and within a short time gained nearly seven pounds in weight, and all the pulmonary and cerebral symptoms improved. The bacilli also disappeared from the sputa. The patient is now enjoying excellent health. It must be remembered that the application should not be made to the whole surface of the skin at one time, as thereby poisoning may be induced.

Treatment of Tuberculosis by Applications of Creosote or Gaiacol to the Skin.—Nearly two years ago, M. Salliet, of Paris, called attention (*Bulletin General de Therapeutique*, April 30, 1892) to the fact that when applied to the skin in a solution of alcohol, creosote and gaiacol are absorbed in quantities sufficient to render easy their detection in the urine. The same author also presented a new method of determining the presence of these substances in the urine, which he claims to be superior to any other. The alcoholic preparation of creosote or gaiacol is simply rubbed on the skin, or is applied with cheese-cloth covered with a protection of some sort. Care must be taken that the application is not made to too large a surface of the skin at one time.

Casasovici has more recently recommended gaiacol in a solution of tincture of iodine, five grains of gaiacol to twenty-five of tincture of iodine. Dr. Salliet insists that gaiacol is much more effective than creosote. The remedy must be used in small doses, increasing the amount progressively, and watching the urine for the first appearance of the drug, which indicates saturation of the system.

Recently Commont has reported a case of acute tuberculosis, involving not only the lungs but the pericardium. The sputum contained bacilli, the urine was albuminous, the meninges of the brain were also affected, indicated by inequality of the pupils, the patient had several slight hemorrhages, and presented an induration at the right apex. The temperature was 102°. The patient was evidently suffering from acute tuberculosis. Fifty centigrams (seven and one half grains) of gaiacol dissolved in alcohol was applied in the manner described. After the third application the temperature fell, and did not rise again. The

A House of Constant Temperature.—Dr. Vanderheyden, a Dutch physician, has erected at Yokohama, a house of non-conducting walls and furnished with automatic appliances by which its temperature remains constant.

Lanolin.—Lanolin possesses the advantage over other animal fats in that it does not become rancid. It is superior to vaseline as a vehicle for medicinal agents, which should be applied by means of a pomade or ointment, for the following reasons: 1. It will mix with water and with aqua solutions; 2. It adheres to the skin.

Lavage in Cholera.—Dr. I. F. Sharr, of Kherson, after trying the usual remedies for cholera, adopted the following: The patient was made to drink six or eight glasses of hot water containing three drops of hydrochloric acid in each tumblerful. After taking the water, the patient was made to expel it by pressure upon the stomach, inducing vomiting. After the water had been expelled, the same process was repeated, if necessary, two or three times, at intervals of two or three hours. At the same time large enemas were used, consisting of one gallon of a two and one half per cent solution of tannin. The water was used as hot as possible. If tannin could not be obtained, water alone was used. The enema was repeated every two or three hours. A hot bath was used when there was a tendency to collapse. The patients were given freely of lemonade made with hydrochloric acid, ten drops to the tumblerful. A swallow of lemonade was administered every ten minutes. The results were very satisfactory.

BACTERIOLOGICAL NOTES.

[THE notes appearing in this department are abstracts or translations prepared expressly for MODERN MEDICINE AND BACTERIOLOGICAL REVIEW, from original sources.]

RELATION OF THE PNEUMOCOCCUS TO THE SYMPTOMATOLOGY OF PNEUMONIA.

By J. H. KELLOGG, M. D.

IN an interesting paper upon pneumonia from an epidemic point of view (*Revue d'Hygiène*, Nov. 20, 1893), Dr. Kelsch summarizes a great number of valuable and interesting facts. After presenting in a clear and conclusive manner the evidence on which the causative relation of the pneumococcus to pneumonia is based, the author states respecting the habitat of the germ, that it is man himself who constitutes the medium in which the microbe develops and by means of which it is preserved. Numerous observers have found this microbe in various parts of the air passages in persons who were, at the time, in perfect health. For example, Pasteur has discovered it in the pharynx and neighboring cavities,—the nasal fossæ, the frontal sinus, the Eustachian tube, and even in the bronchi. Netter has shown it to be persistent for an indefinite time in the saliva of persons who had suffered from pneumonia and had recovered. He also frequently observed it in persons who had never suffered from the disease, finding it present in twenty per cent of 130 healthy persons who had never suffered from pneumonia. Golding Bird found the germ present in 505 of a large number of healthy persons whom he examined, none of whom had suffered from the disease in question.

It is thus apparent that in civilized countries the air must be continually charged with the microbes of this disease, which, drying with the expectorated matters, are reduced to a fine powder and widely disseminated. This mode of dissemination perhaps accounts in part for the great prevalence of the disease in Mexico and other dry countries. Of special interest are the facts presented which show a close and practical relation between the biological properties of the pneumococcus and the symptomatology of pneumonia.

The following are a few of the most striking facts:—

Cultures of the pneumococcus lose their virulence about the seventh day. It is also at this date that a rapid defervescence occurs in pneumonia. The so-called "crisis" of the disease corresponds with the loss of pathogenic properties by the germ.

It is also noted that the saliva of the patient, which during the development of the disease is extremely virulent, producing pneumonic infection in animals when introduced by inoculation, loses its virulence about the seventh day.

The pneumococcus rapidly loses its virulence under the influence of a temperature of 40° C. (104° F.), and loses all activity when submitted to a temperature of 42° C. This fact coincides with the loss of pathogenic properties which the microbe undergoes under the influence of the high temperature which attends the developing stage of pneumonia.

The pneumococcus does not die, however, at the critical period of the disease, but only temporarily loses its virulence, reacquiring its activity at the end of fifteen or twenty days. This reacquired virulence may be retained indefinitely while the microbes reside in the mouth of the recovered patient.

It is evident from these observations that the careful sterilization of expectorated matters in all cases of pneumonia, is a matter of the utmost consequence. It is only by the universal adoption of means of this sort that the disease can be prevented from steadily gaining ground in all civilized communities.

It matters not whether the pneumococcus is admitted to be the primary and sole cause of pneumonia, or whether it is to be considered a secondary cause, operating upon a lung which has previously been prepared for its activity by congestion or other derangement of its function. The close relation of this germ to pneumonia must be regarded as practically demonstrated, and information concerning the necessity for the sterilization of the sputa of patients suffering from this disease, should be disseminated as rapidly as possible.

Another suggestion which grows out of these observations, is that the mouth and nasal cavities should be frequently and regularly cleansed with mild antiseptic solutions, such as a one per cent solution

of chloroform, properly diluted solutions of cinnamon, wintergreen, menthol, thymol, and other substances which are well known to be capable of discouraging the development of microbes, even though not employed in sufficient strength to destroy them. Use the solutions as a lotion for the mouth, and with an atomizer for the nose.

Bacteria and Molds.— Since the first discovery of bacteria, biologists have recognized a close relation between these vegetable organisms and those which are commonly known as molds, or fungi. Prof. Franklin has recently made a careful study of these two classes of organisms with special reference to their action upon organic substances. He states that molds produced an oxidation or combustion, while bacteria produced the catalytic change commonly termed fermentation.

The Bactericide Properties of Ammonia Gas.— Rigler, of Buda-Pesth, has recently demonstrated the disinfecting properties of ammonia gas. The germs of typhoid fever, diphtheria, and other infectious maladies, were suspended by threads in a room of over 3000 cubic feet capacity. A quantity of liquid ammonia, equivalent to two pounds was exposed in proper vessels in the room, and evaporated at the average rate of about two ounces per hour for eight hours. Both the cholera and the typhoid fever germs were found to be dead at the end of two hours. The germs of diphtheria were dead at the end of eight hours. This experiment seems to prove that ammonia is a reliable disinfectant, and more powerful than sulphur fumes.

Destruction of Bacteria by Infusoria.— Dr. D. H. Atfield made, some months ago, in the Hygienic Institute of Munich, a series of experiments for the purpose of determining the relation of infusoria to bacteria. His experiments were made with water from the River Isar. Specimens were collected below the opening of one of the main sewers of Munich, and others above the exit of the sewer. The specimens taken below the sewer were marked "A"; the ones from the river above the sewer were

marked "B." The specimens collected below the mouth of the sewer were found to contain great numbers of infusoria, while those taken above the sewer contained very few, or apparently none. The germs contained in each specimen were carefully counted when they were collected, and again at the end of six or eight days. In one instance "A" was found to contain 637,000 bacteria per cubic centimeter ($\frac{1}{4}$ dram), while specimen "B" contained but 5900 bacteria per cc. At the end of five days, specimen "A" contained only 1200 per cc., while specimen "B" contained 2000. It thus appeared that the infusoria had consumed nearly all the bacteria in specimen "A," reducing their number in the proportion of 500 to 1, while the bacteria in specimen "B" had decreased only in the proportion of about 17 to 1.

In another experiment, specimen "A" was found to contain 3,000,000 bacteria per cc., while specimen "B" contained but 700 bacteria per cc. At the end of ten days, the bacteria in specimen "A" had been consumed by infusoria to such an extent that only 13,200 per cc. were found, while in specimen "B," in which no infusoria were found, the 700 bacteria per cc. had increased to 121,500 per cc.

It will be seen by these experiments that infusoria play a very important part in the purification of water.

J. H. K.

Typhoid vs. Typhoid.— E. Fraenkel reports (*Deut. Med. Woch.*) the treatment of fifty-seven cases of typhoid fever by injection of a sterilized culture of typhoid bacilli, and arrives at the conclusion that the results obtainable by this method of treatment are superior to those of any other method which has been previously employed. The temperature falls and all other symptoms lessen in intensity immediately after the beginning of the treatment, which is said to be more successful in proportion as it is begun earlier in the disease. The injections are said to be perfectly harmless when made into the muscle, but give rise to much pain when subcutaneous. Similar results are reported by Rumpf, in the use of the bacillus pyocyanic in a similar manner, the fever symptoms disappearing in six or eight days.

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THE DISINHERITED.

A PHILOSOPHER has said, "It is the greatest of all human felicities to be well born." Unfortunately, not all human beings enjoy this felicity. Indeed, it is yearly becoming more and more apparent that an increasing proportion of human beings are badly born. In every large city are to be found thousands who belong to what are known as the vicious, the criminal, or the indigent or pauper classes. For the most part, these persons are born into the condition in which they are destined to spend their lives, and are little more responsible for the unhappy situation in which they find themselves than are the deaf and dumb, the blind, or those who are in other respects congenitally deformed. The only difference between the infirmities from which these persons suffer and those with which the cripple, the blind, or the deaf are afflicted, is that their physical deficiencies are less conspicuous. They are, nevertheless, as real. For the most part their deformities consist in bad or abnormal construction of the brain, although a minute examination will reveal, in the majority of persons belonging to these inferior classes, external deformities of a very pronounced character.

Another class of deformities which may be recognized, perhaps more commonly among the so-called "upper" classes, include such congenital defects as flat or narrow chest, weakness of the heart,

feeble digestive powers, a neurotic temperament, and various idiosyncrasies of mind and body.

That these weaknesses and abnormalities of body and mind are perpetuated by heredity, is no longer a question upon which there is any difference of opinion. It is as clearly settled that mental and moral characteristics are inherited as that the color of the hair and eyes, or other physical characteristics, are thus derived. It is equally true, although the fact is often forgotten, that the resemblance of the internal structures of the child to those of his parents is as close as the likeness which can be traced in the external features. Heredity is a force which operates in the most thorough-going manner. Every human being is the product of a principle which has been taking careful notes of the lives and habits, the neglects the excesses and the abuses, of every crime against the body through all the generations from Adam down to the individual man in question. The living man or woman is simply the material representation, the focus or vortex, so to speak, of the myriad of influences which have been operating from the earliest ages of man's history down to the moment of inspection.

Man's physical, mental, and moral character is as much a matter of heredity as is the capital of wealth with which he starts out in life. The man who lives the life of the spendthrift and dies bankrupt, leaves his children penniless. Sometimes it takes a series of generations to consume completely the accumulated earnings of preceding generations. So it is with bodily and mental health. The complete mental and physical bankruptcy which lands a man in the insane asylum or an almshouse infirmary, may be simply the result of two or three generations of sins against the body and the soul on the part of profligate ancestors. "The fathers have eaten sour grapes, and the children's teeth are set on edge."

The world looks with disdain upon the money spendthrift. The man who recklessly squanders the family inheritance and leaves his children penniless, is regarded by the world as little short of a criminal, a thief, a robber. What does society say about the man who by a process exactly identical, disinherits his children of that most valuable of all possessions—soundness of body and mind? Society ignores the sins of this class of criminals, never asking a man to consider the consequences of his course of life upon his possible progeny, but allows him to squander, without questioning his right, the constitutions of unborn children, in open violation of the law by which nature has protected the well being of the human race.

Through this almost universal ignoring of the duty devolving upon every human being to preserve intact, as far as possible, the natural powers transmitted to him from his ancestors, and by training and painstaking development make the most of them, we find the human race deteriorating in physical stamina and a rapidly growing multitude of "disinherited" individuals who are born into physical, a mental, and moral bankruptcy. It is high time that society gave more serious attention to this great class of bankrupts by heredity, from which springs the greater share of crimes and criminals, cranks, lunatics, fanatics, and imbeciles.

A searching inquiry into the causes which lead to this disinheriance, and through which the race is rapidly sinking into physical oblivion, should be undertaken and assiduously prosecuted.

Tuberculous Meat.—There can be no doubt that the danger from the use of the flesh of tuberculous animals is increasing. This danger is also likely to continue to increase as our country becomes more thickly settled, and as the germs of tuberculosis become more widely dispersed.

In old countries, like France, this danger is recognized more clearly than in this country. Stringent inspection laws require the inspection of all slaughtered cattle, both before and after killing, in France; but in this country only a very small proportion of the beef eaten has been subjected to anything like a careful inspection. Indeed, it is doubtful whether the inspection service, in relation to the flesh of diseased animals, is ever what it should be in this country, in which matters of this sort are usually treated with much less care than in most foreign countries.

Another evil which is justly complained of in France, is the fact that only animals in which the tuberculous infection can be recognized as generally dispersed through the body, are rejected. In cases in which the disease seems to be confined to one or two organs, inspectors simply condemn the infected organs, allowing the remainder to be sold for consumption as food.

According to statistics presented by Dr. Deshayes (*Revue d'Hygiène*, Dec. 20, 1893), many thousands of tuberculous cattle are eaten in France annually.

PREVENTIVE TREATMENT OF GALLSTONES.

A QUESTION constantly asked the physician who has assisted a patient through an attack of biliary colic, is, "Doctor, what can I do to prevent another attack?" Here are a few suggestions which the writer has found beneficial in these cases.

Of course if the patient has a number of calculi left in his gall bladder, he is not likely to find any peace until the cargo is unloaded; but if the calculus which has been expelled leaves no concretions behind it, the suggestions made, if carefully followed, will probably prove effectual in preventing a recurrence of the attack. It might also be remarked incidentally that many cases mistaken for

gallstone are really cases of infectious jaundice without gallstones. The suggestions made are especially beneficial in cases of this sort.

1. Wear loose clothing. Gallstones occur most frequently in women, and tight-lacing has been shown to be one of the causes, by obstructing the outflow of bile from the liver and gall bladder.

2. Avoid the use of coarse foods and the excessive use of fats, sugar, and especially avoid the use of cheese, game, and meats possessing a hautgout. The investigations of Dujardin-Beaumetz and others have shown that dilatation of the stomach exists in a considerable proportion of all cases of infectious jaundice and of gallstones, and both of these conditions are secondary to chronic gastro-intestinal catarrh, which is always aggravated by the use of such articles of food as have been above interdicted. The patient should also observe care in the regularity of meals. He should take two meals a day, and should take pains to masticate the food very thoroughly, without taking much drink at mealtimes. Especially avoid the use of ice-water, iced tea, ice-cream, and ices of all sorts. Alcoholics must be forbidden, as also the use of pepper, mustard, spices, and all condiments, except the moderate use of salt. Pickles, fried foods, pastry, and meats, particularly pork, must be absolutely forbidden.

3. Water as a drink should be taken freely at other times than at meals. From two to four pints of water should be taken each day. In case inconvenience results in taking so much water by the stomach, a pint or two of water may be taken by the bowels and retained. If slowly introduced at the temperature of the body, no inconvenience is experienced by taking water in this way.

4. Great pains should be taken to keep the bowels regulated by abundant exercise, the free use of fruits, cold water drinking before breakfast, massage of the

abdomen, horseback riding, and such other methods as are found to be beneficial. A large enema, or coloclyster, should be used in cases in which chronic constipation exists, and which does not yield to simple hygienic measures. Saline cathartics, and, in fact, all sorts of laxatives, must be avoided, as these substances irritate the gastro-intestinal tract and so encourage the disease.

5. Abundance of out-of-door exercise is of great value in these cases, by promoting the elimination of bile, and through encouraging the respiratory movements, assisting in digestion, and overcoming the tendency to stagnation of blood in the portal circulation. Deep breathing is one of the best means of aiding digestion and unloading the liver and portal system. It should be practiced many times daily, ten or fifteen minutes each time. Pains should be taken to expand the whole chest, and especially to contract the diaphragm in such a way as to swell out the abdomen, thus giving the liver a hard squeeze between the diaphragm and the abdominal muscles.

6. Another measure of very great value, but so simple that it is likely to be neglected, is the employment of fomentations over the liver, followed by the moist abdominal bandage, or umschlag as it is termed by the Germans. The fomentation should be applied at night for ten or fifteen minutes. It should cover the region of the liver and stomach, and should be followed by a moist abdominal bandage consisting of a towel wrung out of cold water dry enough so it will not drip, then applied about the body and at once covered with many thick, warm wrappings so as to retain the moisture and heat. This "heating compress" should be retained over night. In the morning, when it is taken off, the parts should be rubbed with cold water, and a dry woolen bandage should be applied, to be worn during the day.

INCREASE OF VENEREAL DISEASES IN GERMANY.

THERE is probably no country in which the province of the so-called Contagious Disease Act, which relates especially to the inspection of prostitutes, has been so thoroughly carried out as in Germany ; nevertheless the commission appointed by the Society of Medicine, of Berlin, with Prof. Virchow as President, recently reported as the result of an investigation, that both prostitution and venereal diseases were found to be rapidly increasing in Berlin. For example, the number of regular prostitutes, recognized as such by the police, was in 1886, 3006. The number had increased in 1891 to 4364, an increase of almost fifty per cent. This represents, however, but a small proportion of the women actually engaged in prostitution, as 16,000 women are annually arrested for plying their vocation upon the streets in Berlin, and it is known that a great number of women live lives of prostitution clandestinely ; so the committee estimates the total number of prostitutes in Berlin at 40,000 or 50,000.

Some idea of the number of persons who are annually infected by venereal diseases may be gained from the fact that the committee reported nearly 80,000 cases as having been treated at two hospitals alone, in Berlin, between 1880 and 1889. The fact was also mentioned by the committee, that a great number of cases were doubtless not included in this category. They quote the estimate of Blaschko, that one in every nine or ten of the male population of Berlin has been infected with syphilis.

A most convincing evidence of the utter inefficiency of the inspection service in preventing the spread of venereal diseases, was shown by the fact developed by the committee, that the naked-eye inspection which has been universally relied upon, detects less than one in five of the cases of gonorrhœa, to say nothing of

syphilis. By making a bacteriological examination of each case, the proportion of prostitutes found to be suffering from gonorrhœa was increased from nine per cent to fifty per cent.

The conclusions drawn by the committee as to the proper action to be taken under the circumstances, seem to us quite absurd. Instead of recommending the abandoning of the unwise attempt to make vice safe, by enabling the criminal to escape the penalty which nature inflicts for the transgression of moral and natural law in relation to purity, they recommend a more rigid investigation, suggesting that the examination should be made twice a week instead of weekly, and that a bacteriological examination should be made in every case. They also recommend that special hospitals and dispensaries shall be provided for persons suffering from venereal disorders, where they may be treated at the public expense, and thus enabled to return as quickly as possible to their base and immoral business.

What a horrible spectacle is this to contemplate in the midst of our boasted civilization ! A vast outfit of laboratories and hospitals, an army of physicians, nurses, pharmacists, clerks, etc., all devoting their lives to the fostering and encouraging of a business which depends wholly for its existence upon the violation of the laws of God and man ! If the moral sense of society, especially of politicians, and we fear the same must also be said to a considerable extent of the medical profession, were not blunted to a most astonishing degree, the only remedy which would be suggested for this gigantic evil would be its absolute prohibition and extermination by means of severe penalties and a faithful administration of the law. What can be said of the inconsistency of which nearly every civilized community is guilty, shown in the maintenance of laws rendering prostitution and licentiousness a

crime, while at the same time this deadly traffic is winked at and not infrequently protected and encouraged?

We commend the facts given above to the consideration of those who have been anxious to introduce into this country laws for the regulation and inspection of prostitutes.

Hot Water in Infantile Maladies.—Any physician who has never made use of hot water as a remedy in the treatment of the diseases of infancy and childhood, will be quite astonished at the surprisingly prompt and satisfactory results which are attainable by the use of this simple remedy. In the gastro-intestinal disturbances which may be said to be practically universal among children brought up under the conditions of civilized life, there is no other single remedy capable of accomplishing one tenth the good which may be expected from the internal and external use of hot water. The vomiting is due to irritating or toxic substances in the stomach, and the diarrhoea to the same sort of substances in the intestinal canal. What remedy is so well calculated to relieve this condition of things as that universal cleansing agent, water? Taken hot, it is not only a cleansing agent, but a stimulant as well; and it acts as a depurative of not only the stomach and intestines, but also of the tissues which have become contaminated through the absorption of ptomaines developed in the alimentary canal.

The plan we have followed for many years, and which has rarely disappointed us, is this: Withholding all food of every description, the patient is made to drink water as hot as is acceptable and as frequently as he can be induced to take it. Usually a tormenting thirst leads the little one to crave liquid which the mother not infrequently gratifies with food, to the great detriment of the child. Food should be withheld for a day or two, if necessary, or until the vomiting

ceases. At the same time, copious hot enemas should be employed to wash out the lower alimentary canal, and also to supply liquid to aid in the elimination of toxic substances through the kidneys. A large hot enema is the most efficient stimulant, and has the advantage over most other stimulants, that its use is not followed by any harmful reaction. The hot enema may be repeated several times a day. A good rule is to administer a hot enema after every stool, unless the stools are unusually frequent. After the vomiting has ceased for twenty or twenty-four hours, food may be administered, beginning first with egg water or barley water or a solution of white of egg, and gradually returning to the usual dietary.

For colic pains, hot enemas, hot water drinking, and hot fomentations over the abdomen are the proper mode of treatment, rarely requiring medicine in addition. In nearly all acute diseases of children, diphtheria, scarlet fever, measles, whooping-cough, even an ordinary cold, the use of hot water in the simple methods suggested, is an invaluable aid to recovery, and rarely fails to bring marked amelioration of symptoms.

The Prolonged Hot Bath in Chronic Joint Disease.—Experience has shown that of all non-surgical measures of treatment which can be adopted, none possesses even approximately the palliative and curative value of the prolonged hot bath. The bath may be administered either by immersing the parts in water contained in a vessel of convenient size and shape, or by wrapping in moist cloths. The only important points are that the parts shall be kept moist, and that the temperature shall be maintained at a point 5° to 10° F. above the temperature of the body. The application should be, as nearly as possible, continuous. If for any reason it must be interrupted, the parts must be at once wrapped with dry coverings in sufficient quantity to prevent chilling, or

any considerable degree of cooling of the affected parts. This treatment may be continued indefinitely, or as long as it is found to be advantageous,—from one or two days to as many weeks, or longer, if necessary. Hot applications lasting from fifteen to thirty minutes, and renewed three or four times daily, are valuable, but the continuous application is of far greater value. An experience of twenty years in dealing with this class of affections has convinced the writer that no other remedy is of so great value as this in dealing with this class of cases.

Hueter was of the same opinion, recommending this measure both in acute and chronic rheumatism, as well as in panarthritis. We are, perhaps, not able to explain the *modus operandi* of this remedy. If we accept the views of Lahli and Guttmann, who hold that rheumatism is due to microbes (*staphylococcus citreus*, according to Lahli), it may be supposed that the prolonged application of heat in the manner indicated exerts a curative influence upon the disease by producing a condition unfavorable for the development of the microbe causing it. It is possible, also, that the morbid process, if due to the toxic influence of ptomaines, may be checked by the promotion of absorption through the increased activity of the bloodvessels and the lymphatics through the influence of heat. Whatever may be the explanation, the fact remains that the prolonged application of moist heat is the remedy par excellence for both acute and chronic joint troubles of almost every sort.

Pasteurized Milk.—When the fact was discovered that milk is frequently a means of communicating the infection of typhoid fever, cholera, and other germ diseases, the suggestion was soon made that as a means of preventing these infectious diseases, milk should invariably be sterilized by prolonged boiling. Later experiments, however, have shown that

the prolonged boiling of milk to some degree modifies its constituents and lessens its value as a food. The fact that boiling milk has the tendency to produce inactivity of the bowels, is one with which even the laity are quite familiar. Pasteur, by careful experimentation, discovered long ago that heating milk for ten or fifteen minutes to a temperature of 160° will destroy the pathogenic microbes which it contains, and to such an extent destroy those microbes which set up decomposition in milk and allied substances, as to considerably increase its keeping qualities.

Doubtless most physicians are aware of this fact, and yet the frequency with which we hear *boiled milk* recommended as an article of food, especially for young infants, leads us to believe that the profession do not so generally utilize this important fact as it would be in the interest of their patients for them to do. It is rarely necessary to recommend *boiled milk* for a child, or indeed for a patient of any age. Instruction should be given that the milk be heated to a temperature of 160° for fifteen minutes. After heating, the milk should be cooled as quickly as possible, and kept cool until used; unless it is desired that it should be taken hot, when it may be heated just before taking.

Hydropathic Treatment of Fever.

—The introduction of the great number of so-called "Antipyretics" has to a considerable extent diverted professional attention from the use of water as a means of reducing temperature. Brand, Juergensen, Tripier, Ziemssen, Bouveret, Winternitz, Vogl, and other eminent continental physicians, have deduced such an array of evidence of the utility of water in the treatment of febrile conditions, especially in typhoid fever, that the efficiency of this therapeutic agent can no longer be doubted. We can find no

other reasons for the general neglect of this agent than —

1. That it is not so convenient of application as a drug which may be swallowed ; and —

2. That there is more or less prejudice against the use of water still existing on the part of the laity as well as in the profession.

We entirely agree, however, with Prof. Vogl, who said, "The physician who has become convinced of the utility of the method and has not the courage to combat all obstacles, does not stand on the pinnacle of his profession."

Among the most efficient means of employing water in typhoid fever, are —

The tepid sponge bath, frequently repeated ; wrapping in a sheet wrung out of hot water, allowing the patient to remain uncovered, except by the sheet, so that cooling occurs by evaporation ; the application of heat to the spine ; large cold compresses changed every five or ten minutes, applied about the trunk ; cold wet-sheet pack, renewed every half hour for several hours, two or three times in the twenty-four hours ; the cool enema ; the graduated bath, beginning at a temperature one or two degrees below that of the body of the patient, and cooling at the rate of one degree every five minutes, until the water reaches a temperature of 84° or 85° . Cold applications should never be used when the surface of the patient's body is purple, when he complains of being chilly, or when the skin presents the appearance of goose flesh. These symptoms require the application of heat to the spine, sponging the surface with hot water, the application of a hot sheet, or the brief application of the blanket pack.

The treatment of typhoid fever does not consist in the exclusive use of cold water. Cold water should be used only when the temperature is high and the skin is hot. A cold or bluish skin, goose flesh, and chilliness indicate the need of hot, warm, or tepid applications.

Diet for Diabetics.—The idea that all starch must be excluded from the dietary of a diabetic is an error. In mild cases it is not essential that all starch should be excluded, for the reason that the system requires a certain amount of hydro-carbons, and can make use of them. It is only necessary that the proportion of hydro-carbonates should be greatly reduced. Ordinarily, in mild cases, it is not necessary to reduce the hydro-carbons to less than one half, or at most one third, the ordinary amount. In grave cases it is positively dangerous to place the patient upon a strict meat or nitrogenous diet, for the reason that the weakened renal function renders it impossible for the patient to eliminate the great quantity of ptomaines or toxines which are necessarily introduced into the system by an exclusive meat diet. Cases not infrequently occur in which death results from diabetic coma, from the attempt of the patient suffering from grave diabetes to subsist upon an exclusive diet of flesh. A bill of fare which we have found satisfactory in these cases is the following : —

Gluten biscuit, containing a moderate amount of starch ; eggs in various forms ; peas, beans, lentils, cabbage, sea kale, lettuce, spinach, celery, green peas, string beans, Brussels sprouts, carrots, turnips, and kumyss made without the use of cane sugar or yeast.

In addition to a proper dietary, it is important that the patient should receive such treatment as will stimulate the oxidation processes, and thus consume the sugar with which the blood is overcharged. A cold morning bath followed by vigorous rubbing is a measure to be recommended. After the bath, the patient should be rubbed with olive or almond oil, or fine vaseline. It is also important that the patient should take an abundance of exercise. As a rule, it is important that as much exercise as possible should be taken short of absolute exhaustion or very great fatigue.

PUBLISHERS' DEPARTMENT.

THIS number of the journal is a little late in consequence of the fact that the editor has been away on a six weeks' vacation. It is hoped that all numbers in the future will be on time.

It is the design of the editor and publishers of this journal to make it fill a place which is unoccupied in the field of medical literature, and the encouraging words received from the members of the profession in different parts of the United States, afford a basis for the belief that the efforts of the editor and publishers are appreciated. The journal is the organ of no party, society, or institution. Its purpose is to present to the profession what is newest and best in rational medicine. To accomplish this requires a wide survey of medical literature—French, German, Italian, Spanish, and Scandinavian, as well as English medical literature, not only that of America, but of Great Britain, Canada, and the Colonies. No pains or expense is spared to enable this journal to fulfill its mission as an exponent of rational medicine in the highest sense of the term.

THIRTY-FIFTH ANNUAL MEETING OF THE AMERICAN MEDICAL ASSOCIATION.—This meeting will be held in San Francisco, beginning June 5, 1894. The committee of arrangements are exerting themselves to make the meeting a thorough success. The Mid-Winter Fair in San Francisco is an added attraction worth considering.

FOURTH ANNUAL MEETING OF THE AMERICAN MEDICAL TEMPERANCE ASSOCIATION.—This meeting is to be held in connection with the meeting of the American Medical Association at San Francisco, June 5, 1894. It is expected that this will be the most largely attended and most interesting meeting of the American Medical Temperance Association which has yet been held.

This Association has been steadily growing in interest since the first meeting held in Washington, and although its membership is not yet large, it is growing, and there is a growing interest in the work of the Association, as shown by the increasing interest taken in the *American Medical Temperance Quarterly*, which is its organ. The Secretary, Dr. Crothers, is making active efforts to arrange an interesting program, and it is hoped that the members of this Association will, as far as possible, endeavor to be on hand and to bring their friends with them.

We are personally acquainted with a considerable number of physicians in California and the West who are total abstainers, and believe the Association will secure a considerable number of new members at the San Francisco meeting.

THE NEW YORK PASTEUR INSTITUTE.—We are pleased to see by a note recently received from our friend and collaborator, Dr. Paul Gibier, President of the New York Pasteur Institute, that this excellent institute which, through the kindness of a wealthy New York philanthropist, has been provided with an ample and admirably fitted building at 1 to 7 West 97th Street, has completed another year of most successful work. Dr. Gibier sends us a tabulated state-

ment of the work of the institute during 1893, the fourth year of its existence, and says: "You will notice that not a single case of hydrophobia has been observed among the eighty-five persons treated, while other persons and animals, bitten at the same time, have died of rabies. I am pleased also to inform you that the one hundred and four persons treated in 1892, whose cases you so kindly mentioned at the time, have remained well."

The existence of this admirable establishment in New York should be known to every member of the profession in the United States, and no time should be lost, in the case of the injury of any person by a rabid dog, in taking them to this admirably conducted establishment.

Dr. MARGARET A. CLEAVES, Secretary of the American Electro-Therapeutic Association, in a special circular calls the attention of the manufacturers of electrical instruments for medical use to the fact that the following committees have been appointed by the Electro-Therapeutic Association. Manufacturers who desire to give these committees an opportunity to investigate the merits of their instruments, may obtain further information, if desired, by corresponding with members of the committees, or by addressing Dr. Cleaves for a copy of the special circular referred to. The address of the Secretary is 68 Madison Avenue, New York.

Committee on Standard Coils.

Dr. W. J. Morton, 19 East 28th St., New York.

Dr. A. H. Goelet, 351 West 57th St., New York.

Dr. Wm. F. Hutchinson, Providence, R. I.

Dr. G. J. Engelmann, 3003 Locust St., St. Louis, Mo.

Mr. A. E. Kennelly, Chief Electrician, Edison Laboratory, Orange, N. J.

Committee on Standard Meters

Dr. Margaret A. Cleaves, 68 Madison Ave., New York.

Dr. Emil Heuel, 352 Willis Ave., New York.

Mr. W. J. Jenks, Electrical Engineer, 44 Broad St., New York.

Committee on Standard Electro-Static or Influence Machines.

Dr. W. J. Morton, 19 East 28th St., New York.

Dr. J. H. Kellogg, Battle Creek, Mich.

Dr. G. Betton Massey, 212 South 15th St., Philadelphia.

Dr. Margaret A. Cleaves, 68 Madison Ave., New York.

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Dr. W. J. Herdman, 48 East Huron St., Ann Arbor, Mich. Current Controllers and Battery Tests.

Dr. Robert Newman, 68 West 36th St., New York. Primary Stationary Batteries.

Dr. D. S. Campbell. Correspondence with Physicians.

PUBLISHERS' DEPARTMENT.

R. G. Brown, E. E., Brooklyn, N. Y. Secondary Batteries and Dynamos.

Committee on Standard Electrodes.

Dr. A. Lapthorn Smith, 248 Bishop St., Montreal, Canada.

Dr. Charles R. Dickson, 263 Victoria St., Toronto, Ontario.

Dr. Plym S. Hayes, 84 Washington St., Chicago, Ill.

Committee on Electric Light as a Therapeutic and Diagnostic Agent.

Dr. Plym S. Hayes, 84 Washington St., Chicago, Ill.

Dr. Margaret A. Cleaves, 68 Madison Ave., New York.

Dr. H. H. Hahn, 304 E. Federal St., Youngstown, Ohio.

A NEW REMEDY FOR DIABETES MILLITUS.—In this disease the emanation of the sugar through the kidneys is the result of failure of the system to consume the sugar at the usual rate, thus giving rise to its accumulation in the blood above the normal proportion of two or three parts in one thousand. Hildebrandt, in recent experiments upon artificial diabetes in dogs, induced by the administration of phloridyn, found that Piperazine Bayer in sufficient doses promoted the oxidization of the sugar to such a degree that it fails to appear in the urine. No evidence of diabetes or of the impairment of the health of the animal experimented upon, was observed when the two drugs were administered together. Hildebrandt then applied Piperazine in a case of diabetes, administering fifteen to twenty-five grains daily in aqueous solution in divided doses, and at the end of fourteen days found the amount of sugar reduced from eight per cent to three per cent, the patient's general condition being materially improved. Dr. Gruber also reports valuable results in the use of Piperazine, which he administered in fifteen-grain doses dissolved in soda water.

The cost of this remedy has been greatly reduced by the employment of a new process of manufacture, and it may be worth while to give

the remedy a further trial, especially as there are so few medicinal agencies of any marked value in this disease; it is not be disputed, however, that abundant exercise and a restricted diet are the measures most to be contended for in the treatment of this malady.

DR. DOMANSKI says: "In recent cases of 'rheumatic' neuralgia, particularly in the region of the sciatic nerve and also in that of the trigeminus and others, and in muscular rheumatism of short duration, especially if of acute development, I prescribe with very satisfactory and often surprising results, phenacetine with salol and caffein (10 per cent of the quantity of phenacetine) for adults according to the following formula:—

Phenacetine-Bayer

Saloli aa 2.50-4.00

Caffein puri 0.25-0.40

M. f. p. in dos. aeq. X div.

S. From two to four powders daily.

With this mode of administration, I have never perceived any unpleasant by-effects, either of phenacetine or of salol, and in almost every instance, I could dispense with injections of morphine, a fact of great importance in country practice." — *Therapeutische Monatshette, November, 1893.*

THE Fourth Annual Meeting of "THE ASSOCIATION OF MILITARY SURGEONS of the UNITED STATES," will be held in Washington, D. C., May 1st, 2d, and 3d, 1894.

This National Organization is composed of Medical Officers of the U. S. Army, U. S. Navy, National Guard of the United States, and the Hospital Marine Service—in whose service are many of the most celebrated and distinguished surgeons of our country. A brilliant and able literary programme will be presented. The afternoon of one day will be set apart for an object lesson from the "Manual of Drill," by the Hospital Corps. The evening will be given up to social entertainments. There will be about five hundred delegates in attendance.

"ARSENAURO" BROMIDE OF GOLD AND ARSENIC

SOLE AUTHORIZED FORMULA OF DR. W.F. BARCLAY-

Every 10 drops—the ordinary dose—contain 1-32 grain of gold bromide and 1-32 grain of arsenic bromide.

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(BAYER) has completely justified the opinions of medical men touching its value in modern therapeutics. It is indicated in all acute, inflammatory, febrile conditions, and all forms of pain. It is the safest, while the most active, of the antipyretics and analgesics. PHENACETINE-BAYER is supplied in *ounces, tablets and pills*; also in pills and tablets combined with Salophen, Sulfonal, quinine, etc.

SULFONAL=BAYER

For Insomnia and the Neuroses Sulfonal is a safe and active remedy, inducing physiological sleep, free from narcosis, and without sequelæ. Sulfonal is a reliable hypnotic, and is endorsed alike by neurologists and general practitioners. Sulfonal is best exhibited in solution with boiling water, which is allowed to cool until it reaches the drinking point. Supplied in *ounces, tablets and pills*.

SALOPHEN

In Acute Rheumatism, Salophen has been strongly recommended by competent observers as the most energetic and eligible remedy now employed for that malady. Salophen is a salicylic derivative of a non-toxic phenol. Salophen is supplied in *ounces, tablets and pills*. In very painful conditions, and in influenza, Salophen may be given in combination with equal parts of Phenacetine.

SOMATOSE

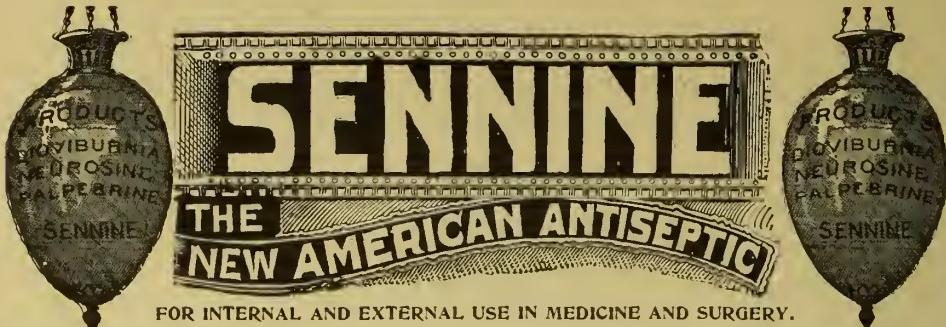
Is a preparation of meat, and consists essentially of Albumoses with only a minimum amount of peptones, which have slight nutritive value. It is an odorless, light-yellow powder, readily soluble in water, and contains the nutrient salts of fresh meat. Somatose is useful in febrile diseases, gastric affections, phthisis, anaemia, rickets, etc. Supplied in two ounce, quarter, half and one pound tins.

AND

Europhen = Losophan = Piperazine-Bayer = Trional

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Composition.—A chemically Pure Product of Boracic Acid and Phenol.

Physical Properties.—A very fine white Powder, Odorless, slightly Astringent, of Sweetish Taste.

Medical Properties.—Antiseptic, Autizimotic, Bactericide, Deodorant, Disinfectant.

Comparatively Inexpensive.—Five parts **Sennine** dissolved in one hundred parts of water (two drachms

make four pints) is sufficiently strong for an antiseptic wash.

Free from Toxic and Irritating Effects.—A substitute for Carbolic Acid, Bichloride of Mercury, Iodoform, etc. Put up in two-ounce tin boxes with inner perforated cover for convenience of applying. Price, \$1.00. Samples and literature mailed Free to physicians on application, or the 2 oz. Box postpaid on receipt of \$1.00.

DIOVIBURNIA

Uterine Tonic, Antispasmodic, and Anodyne.

A reliable and trustworthy remedy for the relief of Dysmenorrhœa, Amenorrhœa, Menorrhagia, Leucorrhœa, Subinvolution, Threatened Abortion, Vomiting in Pregnancy, and Chlorosis; directing its action to the entire uterine system as a general tonic and antispasmodic.

Formula.—Every ounce contains $\frac{1}{4}$ drachm each of the fluid extracts: Viburnum Prunifolium, Viburnum Opulus, Dioscorea Villosa, Aletris Farinosa, Helouias Diocia, Mitchella Repens, Caulophyllum Thalictroides, Scutellaria Lateriflora.

Dose.—For adults, a dessertspoonful to a tablespoonful three times a day, after meals. In urgent cases, where there is much pain, dose may be given every hour or two, always in hot water.

TESTIMONIALS.

L. Ch. Boisliniere, M. D., Prof. of Obstetrics, St. Louis Medical College.

St. Louis, June 18, 1888.

I have given DIOVIBURNIA a fair trial, and found it useful as a uterine tonic and antispasmodic, relieving the pains of dysmenorrhœa, and regulating the uterine functions. I feel authorized to give this recommendation of DIOVIBURNIA, as it is neither patented nor a secret medicine.

L. Ch. BOISLINIERE, M. D.

From John B. Johnson, Professor of the Principles and Practice of Medicine, St. Louis Medical College.

St. Louis, June 20, 1888.

I cheerfully give my testimony to the virtues of a combination of vegetable remedies, prepared by a well-known and able pharmacist of this city, and known as DIOVIBURNIA, the component parts of which are all

well known to all physicians, and therefore have no relation to quack remedies. I have employed this medicine in cases of dysmenorrhœa, suppression of the catamenia, and in excessive leucorrhœa, and have been much pleased with its use. I do not make such claims (as set forth in the circular accompanying) as to be at all excessive. I recommend its trial, believing it will give satisfaction. Respectfully,

JOHN B. JOHNSON.

H. Tuholse, M. D., Professor Clinical Surgery and Surgical Pathology, Missouri Medical College, also Post-Graduate School of St. Louis.

St. Louis, June 23, 1888.

I have used DIOVIBURNIA quite a number of times—sufficiently frequently to satisfy myself over its merits. It is of unquestionable benefit in painful dysmenorrhœa. It possesses antispasmodic properties which seem especially to be exerted on the uterus.

DR. H. TUHOLSE.

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The Most Powerful Neurotic Attainable. Anodyne and Hypnotic.

An efficient and permanent preparation, REMARKABLE for its efficacy and THERAPEUTIC EFFECTS in the treatment of those NERVOUS AFFECTIONS and morbid conditions of the system which so often tax the skill of the physician. A Reliable and Trustworthy Remedy for the Relief of Hysteria, Epilepsy, Neuralgia, Mania, Chorea, Uterine Congestion, Migraine, Neuralgia, all Convulsive and Reflex Nervoses, the Remedy Par Excellence in Delirium and Restlessness of Fevers.

Formula.—Each fluid drachm contains five grains each, C. P. Bromides of Potassium Sodium and Ammonium, $\frac{1}{2}$ grain Bromide Zinc, 1-64 grain each of Ext. Belladonna and Cannabis Indica, four grains Ext. Lupuli, and five minimis fluid Ext. Cascara Sagrada, with Aromatic Elixirs.

Dose.—From one teaspoonful to a tablespoonful, in water, three or more times daily, as may be directed by the physician.

To physicians unacquainted with the medicinal effects of Dioviburnia, Neurosine, and Sennine, we will mail pamphlets containing full information, suggestions, commendations, of some of the most prominent professors in medicine, and various methods of treatment; or to those desiring to try Dioviburnia, Neurosine, and Sennine, and who will pay express charges, we will send on application a trial bottle of each, free.

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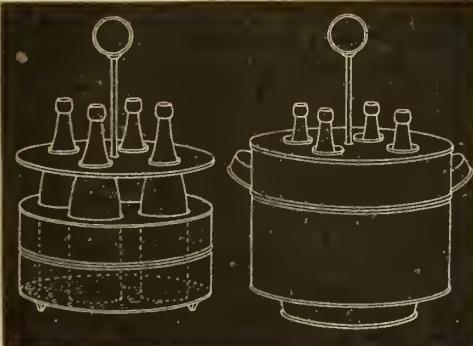
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They are well made of thoroughly seasoned oak, and will sustain a weight of one hundred pounds.

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With the above apparatus, milk can be sterilized so that it will keep for years, when tightly sealed in a bottle or can.

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IT WILL KEEP INDEFINITELY.

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 HIGHEST AWARD WORLD'S FAIR, OCT. 4TH, 1893.



Fig. V—Semi-Reclining.

- 1st. Raised by foot and lowered by automatic device.—Fig. I.
- 2nd. Raising and lowering without revolving the upper part of the chair.—Fig. VII.
- 3rd. Obtaining height of $39\frac{1}{2}$ inches.—Fig. VII.
- 4th. As strong in the highest, as when in the lowest position.—Fig. VII.
- 5th. Raised, lowered, tilted or rotated without disturbing patient.
- 6th. Heavy steel springs to balance the chair.
- 7th. Arm Rests not dependent on the back for support.—Fig. VII—always ready for use; pushed back when using stirrups—Fig. XVII—may be placed at and away from side of chair, forming a side table for Sim's position.—Fig. XIII.
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- 12th. Stability and firmness while being raised and rotated.
- 13th. Only successful Dorsal position *without moving patient*.
- 14th. Broad turntable upon which to rotate the chair, which cannot be bent or twisted.
- 15th. Stands upon its own merits and not upon the reputation of others.

Pronounced the *ne plus ultra* by the Surgeon, Gynaecologist, Oculist and Aurist.

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Fig. XVII—Dorsal Position.

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1873.—Twenty-Second Year.—1894.

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THE SANITARIAN is filled with articles of scientific interest and practical value. It would be difficult to plan a better professional magazine than this, which is to the medical world what the *Scientific American* is to the artisan world. It deserves a greatly increased circulation.—*Baltimore Methodist*.

THE SANITARIAN is not only an interesting magazine to the specialist and the medical man, but it is of high value to thickly settled communities, to homes, to general readers, to city authorities—indeed, we would place the journal, for public good, in the hands of every adult, believing that misery and suffering would thereby be lessened and human happiness augmented by the knowledge the journal disseminates.—*Sacramento Record-Union*.

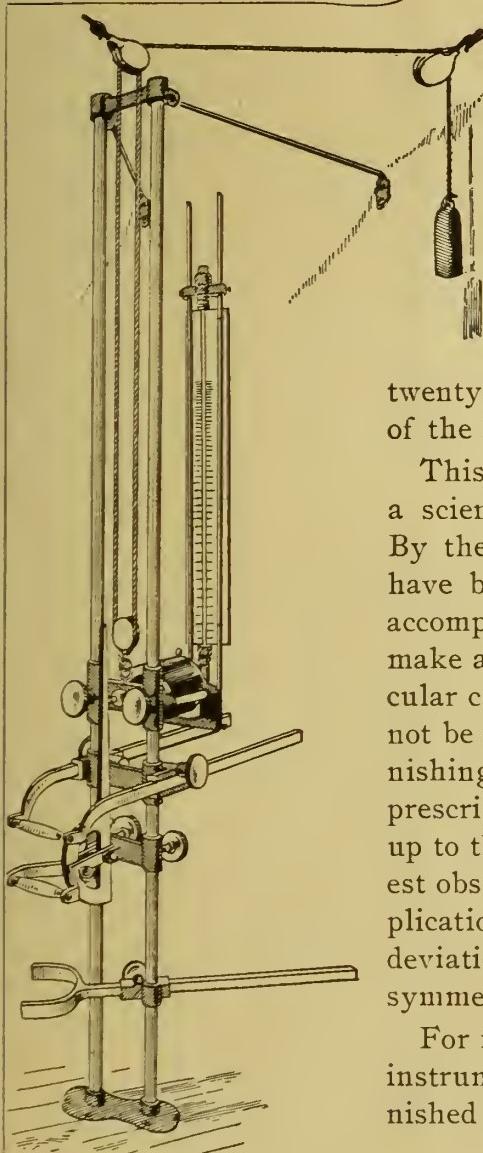
TERMS.—\$4.00 a year, in advance; 35 cents a number; sample copies, 20 cents—ten two-cent postage stamps.

The SANITARIAN is published as hitherto, in New York. **The American News Company, General Agents.** Newsdealers will get their supplies from them.

 All correspondence and exchanges with the SANITARIAN, and all publications for review, should be addressed to the editor,—

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THE accompanying cut represents DR. KELLOGG'S UNIVERSAL MERCURIAL DYNAMOMETER specially adapted to testing the strength of the individual groups of muscles in the human body. Every important group of muscles in the body can be tested with this instrument, numbering twenty-five in all, counting only one side of the body.

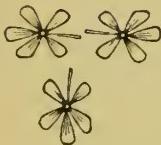
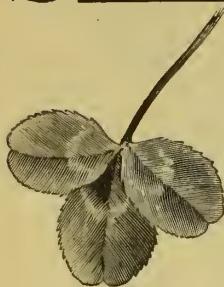
This instrument furnishes the basis for a scientific study of muscular dynamics. By the aid of the percental charts which have been constructed from it, and which accompany the instrument, it is possible to make a graphic representation of the muscular capacity of an individual such as cannot be obtained in any other way, thus furnishing accurate data upon which to base a prescription for exercise, the lack of which, up to the present time, has been the greatest obstacle in the way of the scientific application of gymnastics to the correction of deviations from the normal standard of symmetry.

For further information concerning this instrument and the value of the data furnished by it, address

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Acts most happily in the various skin affections which prove so often unamenable to treatment.

In many forms of skin disease it will be found that digestion and assimilation are at fault. The blood becomes surcharged with the effete products of oxidation, which are not completely eliminated by the bowels, kidneys, and skin as in normal health. In such cases Syrup Trifolium Compound will, by stimulating the action of the bowels, kidneys, and skin, adjust the balance of the processes of waste and repair, and markedly improve the existing skin affection.

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A sufficient quantity for practical investigation we shall with pleasure forward to any physician who will defray expressage. We would also include specimens of other Seasonable Specialties, with literature apropos.

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No. 1 Graham Crackers.....	10	Rye Wafers	12	
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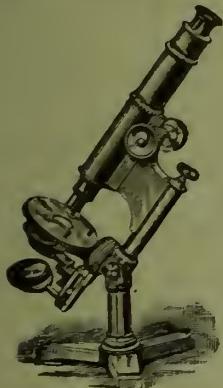
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Medium Continental Stand, with rack and pinion coarse adjustment, micrometer screw fine adjustment; Eyepieces, A (2 inch), and C (1 inch); Objectives $\frac{2}{3}$ inch 28°, $\frac{1}{2}$ inch 116°, and $\frac{1}{2}$ inch H. I. 1.25 N. A.; Substage Condenser, No. 1015 (N. A. 1.42) in mounting with iris diaphragm, \$120.

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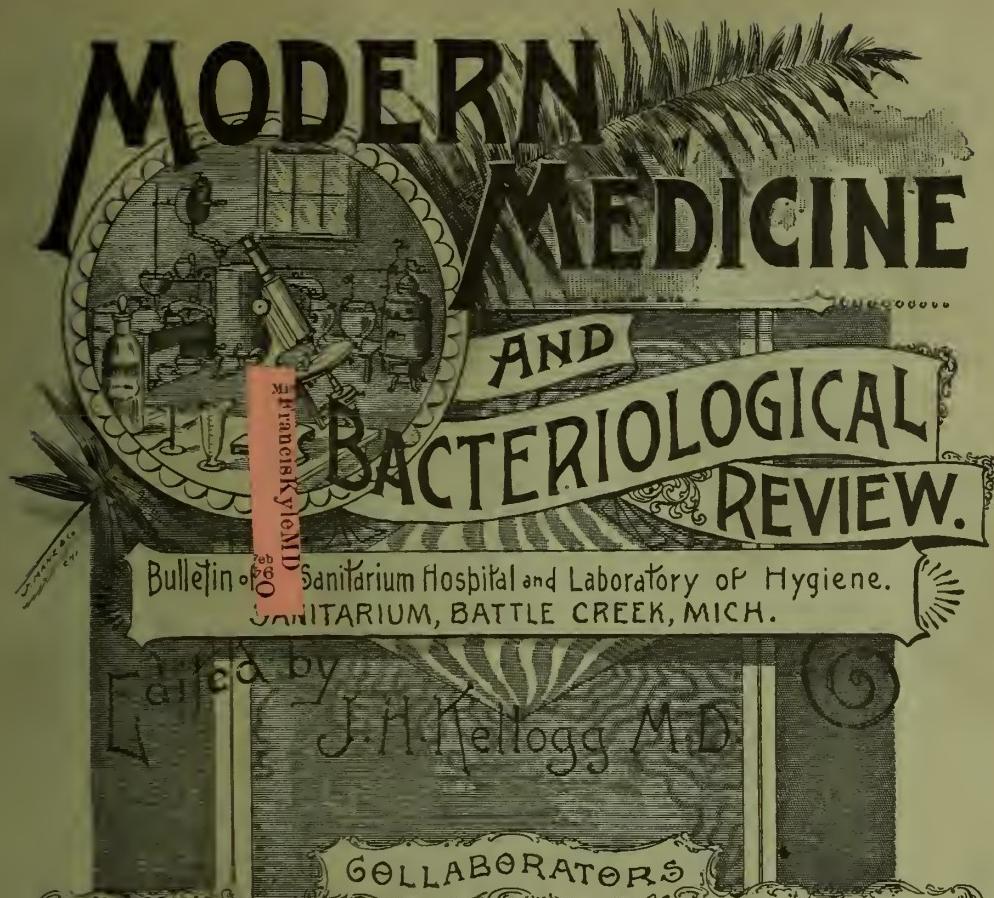
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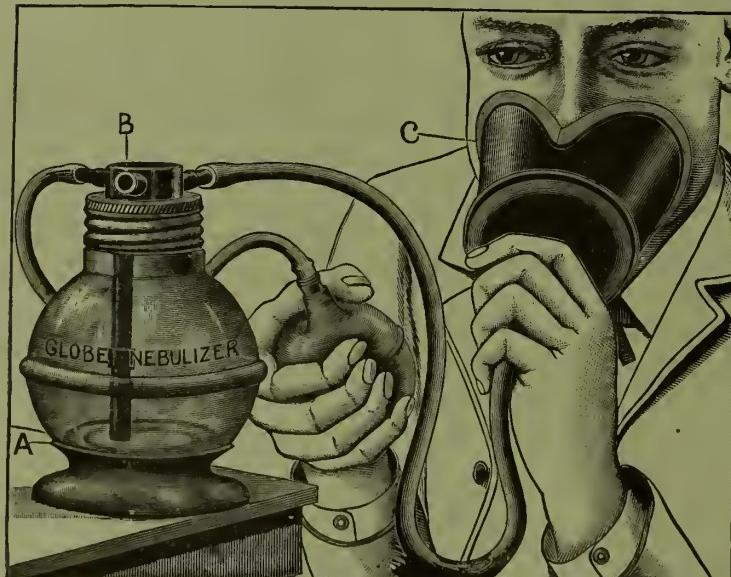
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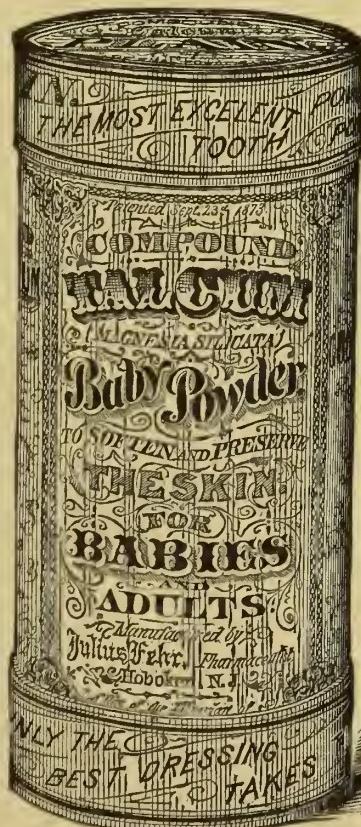
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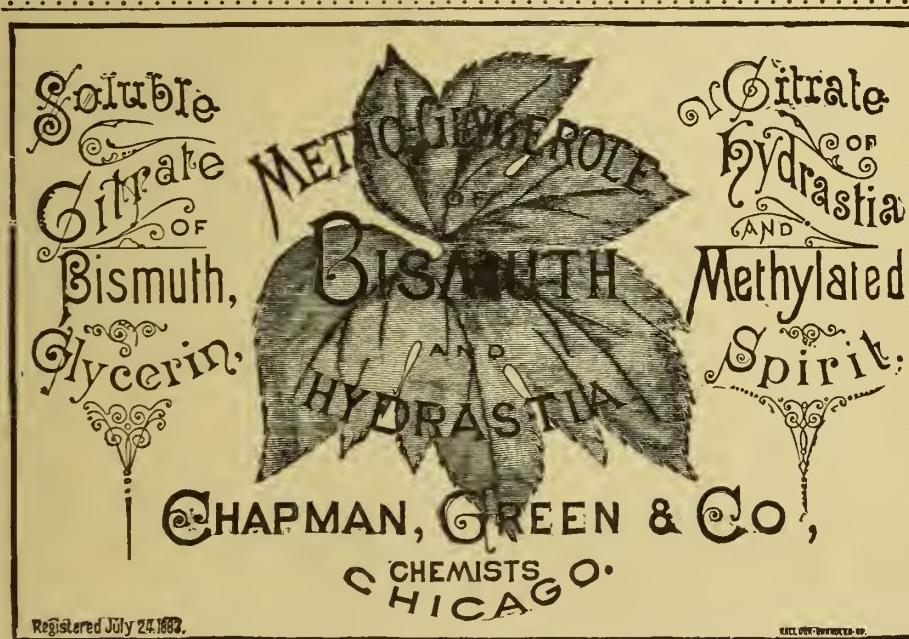
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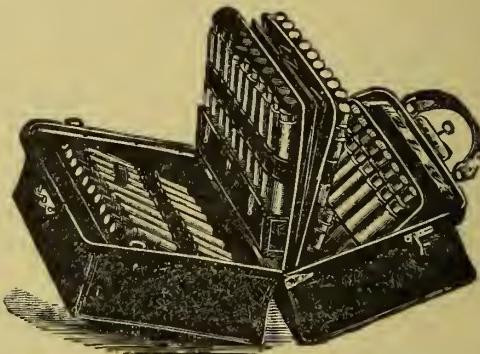
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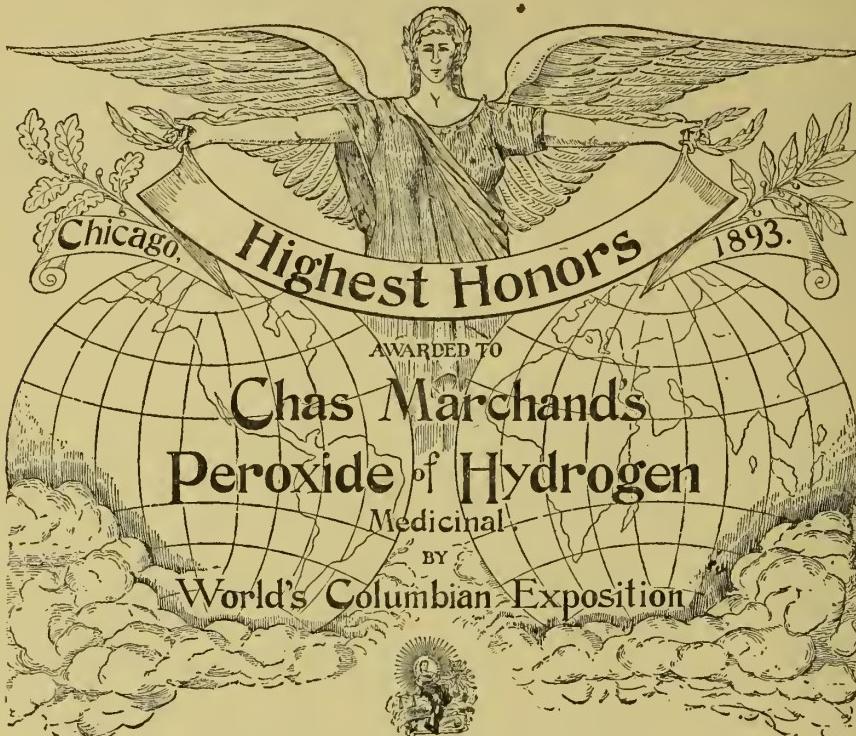
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BACTERIOLOGICAL REVIEW.

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BATTLE CREEK, MICH., U. S. A., APRIL, 1894.

NO. 4.

ORIGINAL ARTICLES.

NURSING IN HOMES, PRIVATE HOSPITALS, AND SANITARIUMS.¹

BY MRS. S. M. BAKER,

Medical Matron of the Surgical Department of the Battle Creek Sanitarium.

AFTER a quarter of a century's experience, Florence Nightingale said she had found the happiest people, those fondest of their occupation, and the most thankful for life, were those engaged in sick-nursing. Though our experience has been a shorter one, and though it has not been among wounded heroes, but in the hospital and in the home, among all grades of society, I am sure we can heartily re-echo her words.

As nurses, we all understand the regulation and routine of hospital work. Not all of us, perhaps, have had the privilege of going into the home and taking from the hands of nervous and anxious friends, whose very anxiety has led them into all kinds of imprudence, a sick one whose lamp of life is just ready to go out for the want of skilled care.

There is no need to speak of the sacredness of the nurse's calling; how, when she enters a home, the dearest and most sacred things in the family are entrusted to her care, the life of the dear one, and perhaps her spiritual guidance. Much of the family life comes under the observation of the nurse, and even the skeleton in the closet is often revealed to her, sometimes unwittingly, and again with a half hope that one who is so helpful in other things may help here also. There is no need to suggest that her influence, if she

be devoted, self-sacrificing, and intelligent, may reach out to every department in the home, and most valuable are the lessons that it may be her privilege to teach in the saving of time and strength, in the laying up of those riches beyond price,—health in the body, knowledge in the mind, and Christ in the heart.

Emerson's words to the careful housewife contain a thought that applies as well to the nurse: "I pray you, most excellent wife, cumber not yourself and me to get a curiously rich dinner for this man and woman who have just alighted at our gate; . . . but rather let that stranger see, if he will, in your looks, accents, and behavior, your thought and will, that which he cannot buy at any price in any city." It is within the knowledge and province of the nurse to give something more than she is hired to give—something that money cannot buy—to help those with whom she comes in contact professionally to a higher plane of living, because she comes near to their inner life.

The prevailing ignorance among the masses of people even respecting the preparation of healthful food, is astonishing. To answer the purpose of nutrition, food must be of the right material and properly prepared. But there are house-mothers who, even in this advanced day of reforms, will take to the sick, rich pie, cakes, sauces, and dainties prepared in the most indigestible manner, with wines and condiments, and abundance of sweets,—food which seriously disturbs the digestive organs and has no strength-giving power. Even those who have learned that such food is injurious to the sick will still carry them tea, coffee, wine, meat-broths, and hot buttered toast, jellies, etc., expecting them to gain strength from what is only stimulating or indigestible.

Mrs. Kellogg's new book "Science in the Kitchen" tells us that the purpose of

¹ Read before the Section of Hospitals, Dispensaries, and Nursing, of the International Congress of Charities, Corrections, and Philanthropy, Chicago, June 17, 1893.

food is to supply material for repairing the waste which is constantly going on in the vital economy. Hence the importance of knowing the comparative values of foods. In the care of the sick, with whom the waste is greater and the vital forces less active, it is needful to know, not only what food is most nutritious, but also what will bring the least tax upon the weakened digestive powers. Soft, warm breads of any kind, fresh, lightly toasted bread included, are indigestible, for simple reasons: First, their softness allows them to be swallowed without proper mastication, and the starch which should have been changed to glucose in the mouth goes into the stomach in lumps which cannot be easily acted upon by the digestive juices. To make it still more indigestible, it is penetrated through and through by the fat of the butter, and fat we know is an effectual barrier to the action of the gastric juice.

The nurse will find it necessary to show the anxious wife or mother why fresh warm bread is pernicious, and why the toast should be browned through, instead of on the surface only. She must explain that the tea and coffee are only stimulants; that milk is to be eaten as a food rather than taken as a drink; that condiments are irritating, and bring about the condition "necessary for the acquirement of a taste for intoxicating liquors;" that it has been estimated that "the evils of bad cookery and ill-selected food exceed those of strong drink;" that cold food or drink in the stomach, lowers the temperature of the stomach and consequently lessens its activity; that mastication is the only part of digestion over which we have direct control, and is habitually slighted, and the food thus passed into the stomach lacks the preparatory step in digestion. So it must be explained that toasted water crackers, beaten biscuit, breakfast rolls, zwieback, or bread twenty-four hours old, are wholesome food; while hot soda biscuit, or fresh raised bread, or fresh half-toasted bread is not.

For our very feeble patient, whose powers of digestion are weak, the food must be more concentrated, nutritious, and easily assimilated. Delicious gruels, made from the grains; milk, either cold (not iced) or hot, or made into junket; eggs, prepared in a variety of simple and attractive ways; cream and fruit toasts;

refreshing beverages made of milk, whey, almond milk, barley lemonade, egg lemonade, apple beverage, and nature's own delicacies, the fruits, can be attractively arranged, pleasing to the eye and palate. This comes not only under the oversight and work of the nurse, but also under her teaching.

If the food question comes under the influence of the nurse, even more do the treatments for the relief of the patient. The rational medicine of the present day is requiring less of drugs and more of natural remedies. The wife or mother to whose relief the trained nurse comes when sickness enters the home, does not know, perhaps, the stimulating or relaxing and soothing effects of the simple remedies, heat and water. How few really know when tired themselves, or when a child is tired or nervous, that a hot bath, followed by a cool pour, is refreshing to a tired mother and soothing to irritated nerves; that heat to the spine will reduce temperature, control some local inflammations, and check internal hemorrhage; and in case of excessive nervousness or excitement, that the most soothing effects come from alternate hot and cold sponging of the spine.

How few, outside of a few trained specialists, understand that of the different forms of hydropathic treatment, one will produce a tonic effect, another a sedative, another a moderate eliminative, another a full eliminative effect; that one will diminish pelvic congestion, another will reduce cerebral congestion, and so on through the list of ailments and remedial measures. The relief from pain which a hot sitz bath will give, the invigorating effect of a cool shallow bath, the soothing influence of the hot spray, or alternate hot and cold sponging of the spine, the comfort of a blanket pack or home-arranged Turkish bath in conditions requiring their use, or of a cool wet sheet pack in fevers, the indescribable exhilaration of a salt glow, is something known only to those who have witnessed their magic working.

In the struggle with the disease which the nurse has aided the physician in combating by means of some one or two of these lines of treatment, the value of which the intelligent physician is coming more and more to appreciate, she has instilled the idea of the rational use of dietetics and of that simple though won-

derful and universal remedy, water, into the minds of the family, and now that the crisis is past, she has come to the waiting time, often the weary waiting, for the return of strength. Can the nurse do more than to see that the diet, treatment, fresh air, and sunshine are made to do their part in bringing the longed-for strength? The long-unused muscles of the patient are weak and almost useless, and she must find her strength in the use of them. She must have exercise to quicken the sluggish circulation, to stimulate the nutrition and carry off the waste. Even while still in bed, she can be led through a gradually increasing scale of exercises. Beginning with hand and arm flexing, and foot and leg flexing, after a few days she can attempt head rotating or arm raising. Perhaps she is too feeble to raise the arm more than a little or a few times the first day, the next a little higher, till the arms can be extended directly upward; then turning from side to side, or other exercise as she can bear, being careful always not to overdo. As she is able to sit up in a chair, trunk bending, twisting, or rotating may be added to the other movements; then the breathing exercises after meals; the quick and the slow and deep inhalations and exhalations, broadening the chest, developing the lungs, purifying and enriching the blood, and sending the glow of returning health to the cheek. These movements are all supplementary to the massage, and manual Swedish movements with active and passive movements; and the patient is on her feet in much quicker time and with more strength than if the important matter of exercise had been neglected.

The criticism has sometimes been made that hospital training schools for nurses do not accomplish all that is desirable in the preparation of nurses for work in caring for the sick in private homes. Hospital work is somewhat routine in character, and necessarily runs in more or less definitely fixed grooves which are determined by the general class of work to which a hospital is devoted, or by the predilections of superintendents or of the house or consulting physicians. In hospital work, also, everything is done under the eye, and to a very large degree under the immediate direction, of the physician. The work in a public hospital is necessarily simplified as far as possible in con-

sequence of the large number of cases which must be cared for by each individual nurse; and the facilities of public hospitals do not always afford so great a variety of remedial agencies, especially those of a hygienic or non-medical character, as might be provided if the business managers were at liberty to draw upon an unlimited fund for the support of their work. The facilities of dietetic, electro-therapeutic, hydropathic, kinesiopathic, and other hygienic measures of treatment furnished by ordinary public hospitals are, to say the least, very meager; and consequently nurses trained in such hospitals do not always have an opportunity for acquiring thorough familiarity with these remedial means. This deficiency is certainly very largely compensated for by the superior opportunities offered by the experience and training in the treatment of emergency cases of various sorts.

Notwithstanding, the hospital trained nurse, when she leaves the supervision of her instructors and starts out upon an independent career as a trained nurse, often finds herself longing for a more thoroughly furnished armamentarium in her battle with disease and suffering in district and private nursing. A well-equipped sanitarium, provided with ample facilities for the administration of every form of hydropathic measures; for the use of electricity in every form; for the utilization of massage, Swedish movements, Swedish gymnastics, and the various forms of physical culture; mechanical appliances for active and passive exercise; diet kitchens and surgical wards with every facility for aseptic surgery, and for the application of all rational hygienic, as well as medicinal and mechanical agencies in the treatment of medical and surgical cases, is certainly an ideal place for the training of the nurse for working in the private home, in district nursing, and, in fact, wherever her lot may be cast. The course of training in such a school necessarily includes not only the subjects usually taught in hospital training schools, but theoretical and practical instruction in the therapeutics of water, electricity, massage, manual and mechanical Swedish movements, medical dietetics, scientific cookery, and a thorough course in exercise and physical culture. My experience has been that nurses appreciate the last-named feature as much

as any other portion of such a course of training. The personal advantages which the nurse derives from the possession of strength, enduring muscles, perfect digestion, capacious lungs, a strong waist, a back that never aches, an elastic step, a dignified, graceful, and energetic bearing, are beyond estimate.

The training in physical culture, massage, and Swedish movements gives the nurse full command of all the advantages to be derived from measures of treatment which operate through the muscular system in the treatment and cure of disease, and enables her to accomplish in many cases for her patient what cannot be accomplished by drugs or by any other means.

The resources afforded by electricity, especially the galvanic and faradic currents, are not at the full command of a nurse unless she has had months of daily experience in its use, and has learned well its potency and modes of application to the great variety of morbid conditions to which it is adapted. She must know more than this; she must have learned so well the secret of the battery by which the current is produced, whether faradic or galvanic, that in case the instrument fails to work (which it is quite likely to do when it is needed most), she can give it the magical touch which will unlock its potent forces; or, if need be, she may construct out of the raw material a battery capable of accomplishing useful results.

Sanitariums afford a specially favorable field for the study and application of medical dietetics. The absence of a regulation diet makes it possible to adapt the bill of fare to the needs of each individual patient, with a degree of accuracy which cannot be attempted under less favorable conditions. Facilities for analysis of stomach fluids and other secretions afford a basis for the exact study of the dietetic needs of patients, which affords the nurse educational advantages of no small value.

But perhaps the most practical advantages of all derived by the nurse from training in a well equipped and scientifically organized sanitarium are derived from the daily and hourly experience in the use of hydropathic measures of every description. Water is a simple remedy which is universal, and is a most convenient means of utilizing those most potent of therapeutic measures, heat and cold, which act upon the central nervous system,

and through it upon the whole body, in a manner little less than marvelous. The nurse who is able to take the result of such a course of training into the home, into her work as a district nurse, or to a foreign field as a missionary nurse, is equipped for work of the highest usefulness, and feels a confidence in meeting every form of human malady not to be derived from any less thorough-going system of training.

In the sanitarium, private hospital, and home, the nurse has the further advantage of an opportunity for the more exact treatment and study of her cases than in ordinary public hospital work, in consequence of the smaller number of patients usually placed under the care of each individual nurse. In well-organized private sanitaria, patients who require nursing usually receive the whole attention of a single nurse, and sometimes of two nurses, one for the day, the other for the night. The application of so large a variety of measures of treatment gives the nurse abundance of work to do, even in caring for a single patient, and one which might not be considered of the most critical class, as for example, the case of a rest-cure patient, of which the following is a sample program: 7 A. M., light skin friction and toilet. 8 A. M., first breakfast. 9 A. M., gentle massage of the stomach for fifteen minutes. Then the patient is allowed to rest three-quarters of an hour, while the nurse makes arrangements for morning treatment. 10 A. M., hot applications to spine, cool saline sponge bath, followed by vigorous massage or general faradization. 12 M., second breakfast. 1 to 3 P. M., rest in room, or in wheel chair, hammock, or cot on the porch or in the grove. 3 P. M., dinner. 4:30 P. M., light gymnastics or mechanical Swedish movements. 7 P. M., lunch. 9 P. M., sponging or rubbing of the spine and preparation for the night. The treatment is varied from day to day by the physician according to each individual case or to suit changing conditions.

In carrying out such a program, the nurse will certainly find no time for idleness, and besides the treatment enumerated, there is a vast number of little things to be done for the patient, such as reading, writing letters, keeping visitors away, doing little errands, and above all else "making sunshine" for the patient.

In the care of surgical cases fresh from

the operating room, there is, of course, much more to be done. The following example is an exact copy of the hourly notes made by the day and night nurses in charge of a patient during the first twenty-four hours after an operation for the removal of diseased tubes and ovaries: The case was a critical one. Tubes distended with pus and adhesions numerous and dense. Operation completed at 5 P. M., patient placed in bed, surrounded with hot bottles. Pulse to be taken every fifteen minutes, temperature every two hours. Drainage tube to be examined every three hours. 8 P. M., nausea, ice-bag to throat, fomentation to spine, temperature taken. 9 P. M., fomentation to stomach, position changed. 10 P. M., vaginal douche, ice-bag refilled for application to throat, temperature taken. 12 faradization to stomach and spine, temperature taken. 1 A. M., ice-bag over dressing, patient slept about fifteen minutes. 2 A. M., hot enema to remove gas from bowels, temperature taken. 3 A. M., drainage tube examined and fluid withdrawn. 4 A. M., patient slept a few minutes, temperature taken. 5 A. M., patient vomiting, application to stomach and throat renewed. 6 A. M., fluid withdrawn from drainage tube aseptically, fomentation to stomach, ice-bag to throat. 7 A. M., hot vaginal douche, patient slept an hour. 9 A. M., faradization to stomach. 10 A. M., hot bags to back and ice to throat, temperature taken. 11 A. M., fomentation to stomach. 12 M., hot vaginal douche, fluid withdrawn from tube, temperature taken. 1 P. M., ice-bag to throat, hot bag to stomach, patient slept an hour. 2 P. M., cool compress to head, temperature taken. 3 P. M., hot bag to spine. 4 P. M., faradization to spine, hot foot-bath, temperature taken. 5 P. M., fomentation to stomach, cool compress to head. Of course, in the care of such a case there are innumerable other attentions necessary, such as turning the patient, changing head, rubbing limbs, and a great variety of other duties which require the constant and faithful service of a nurse.

The results of such assiduous attention on the part of the well-trained nurse ought to be better than those ordinarily attained, especially in the treatment of acute and surgical cases; and that the results are superior is abundantly attested by the records of private hospitals and sanitaria-

where such care is given. In one hospital, with the work of which I am familiar, and in the wards of which many serious surgical cases, including an average of two abdominal cases weekly, stitch abscess rarely ever occurs, even after the most tedious operations, peritonitis is almost absolutely unknown, and erysipelatous inflammation of wounds is never seen. In my own wards I have seen 172 ovariotomies for removal of diseased ovaries or appendages, including many large ovarian and uterine tumors, with an equal number of successive recoveries and without a single case of peritonitis. The operations were, without doubt, skillfully performed, but the operator makes no claim to greater skill than some other operators whose records of recoveries are by no means so great, and does not hesitate to attribute the extraordinary success to the thorough preparation of the patient, including aseptic dietary and the careful nursing after the operation.

Not all the methods used at a sanitarium or private hospital are adapted to the home, but a very large share of the hydropathic, electric, and dietetic measures employed at a sanitarium, together with the resources of massage, physical culture, Swedish movements, and Swedish gymnastics, can be utilized in the cases requiring nursing at home.

Nursing in homes and private hospitals or sanitaria affords the intelligent nurse an admirable opportunity to do an educational work for her patient of the greatest importance as a means both of cure and of prevention of future suffering and disease. In taking charge of a case, a nurse may limit her work absolutely to the care of the sick, and on leaving, may feel that she has done her duty. She will carry with her the abundant gratitude of the patient and her family; but her province can extend farther. If her heart is sincerely in her work, and her training thorough, her influence will not stop with teaching the science of dietetics, or ventilation, or disinfection, or exercise, or the use of heat and water; but her quick penetration will often find in a home the members of the family living by false standards, either through ignorance or carelessness. One of the most painful and appalling errors to a wide-awake nurse who understands the principles underlying healthful dress, is the prevailing ignorance on that subject, and the dis-

comfort and misery following in its train. The inequality of warmth over different parts of the body, the weight suspended from the hips, the tight bands and stays about the waist, the sweeping skirts, the high-heeled shoes, are destructive to the comfort and health and consequently to the happiness, of thousands of families.

At the Battle Creek Sanitarium Training School we are taught that this error must be corrected by example as well as precept, and we dress with equal warmth from neck to ankles, constricting bands and stays are entirely discarded, and lungs and limbs are alike free in their action.

Dress-reform strikes unpleasantly those who do not understand just what is to be gained by it, and it is the nurse's privilege to teach why the old way will bring discomfort and disability, even if worse evils are escaped. We heard at the Woman's Congress that ninety-five diseases and disorders come from bad dressing. The nurse will find it an argument in overcoming the prejudice against this most stubbornly opposed of reforms, that the stigma is being lifted, first by its agitation by the leading ladies of the land until it is being better understood, and second, because the masses have discovered to their surprise that beauty in dress and dress reform can walk hand in hand, and that the Bloomer costume is by no means a requirement of rational dress reform.

When the nurse has converted her patient to the principles of healthful dressing, and has shown her how to adapt her style of dress to it, she has put her in a position, quoting again from an address at the Woman's Congress, where her life may "be greatly richer when not handicapped by dress."

Is this all a nurse can do? Perhaps the life of the patient has been heretofore only for selfish pleasures and ambitions. It may be she has never felt before that "it is not all of life to live." As the nurse ministers to her from day to day, she looks to her for words of counsel and light on a subject which to the sufferer is dark and misty. This is the most golden opportunity of all the nurse's work, and in the dark moments when the friends of the sufferer turn to her for courage and comfort, what comfort can she give if she cannot bring them to the feet of the Great Physician?

Often it is the unrest and the disappoint-

ments of life, or its hurry and rush, that have brought the physical suffering that we are called to alleviate; and the nurse who can show the sufferer how to find the higher strength with which to meet life, will have given to her patient a help as much more potent than physical ministrations alone as the spiritual life is higher than the physical. Indeed, as the two are so closely and indissolubly linked, the ministering to the mind diseased is often an important factor in the recovery of the patient. It is much to alleviate physical suffering; it is a satisfying work to minister to the comfort of others, to save life, as is often our privilege; but as the life beyond is infinitely greater than this life, so is our satisfaction and our reward infinitely greater if we can help those to whom we minister to appreciate that life and the relations of this one to it. The grateful thanks of the patient whom we have nursed back to health are very pleasant, but sweeter still is the assurance that the life thus restored has taken on a new meaning, and has been consecrated to a higher service than before.

Not always can we see that done in the homes of our patients which we would be glad to see done; but if we work "as unto Him," seeking to leave, as results of our effort, healthier bodies, purer homes, sweeter lives, and nobler aspirations, as we go from home to home, we can safely leave the results with the Great Physician under whom we serve.

RELATION OF MODERN PHYSIOLOGICAL CHEMISTRY TO DIETETICS.

BY J. H. KELLOGG, M. D.

THE sources of the poisons constantly found in the tissues is the tissue metamorphosis, the various vital processes by which the activities of the body are maintained. Muscle work results in the formation of poisonous substances, the presence of which is made evident by a sensation of fatigue, either general or local, which results from muscular work.

A further demonstration of the fact above referred to is found in an observation long ago made by physiologists in experimenting upon the muscles of frogs and other animals, separated from the

body of the animal in what is known as a muscle preparation. Such a preparation may be made to contract by the application of an electrical current for a considerable period. After a time, however, it becomes fatigued and refuses to react to the electrical stimulus, but simple washing in a normal saline solution restores its activity. Muscle fatigue is simply a state of partial or complete paralysis resulting from the accumulation within the muscle of the poison resulting from muscular work.

Brain activity results likewise in the production of a peculiar poison which lessens and finally suspends its activity until the poison has been washed away by the blood current. Various conditions modify the vital activities of the body and consequently the production of these poisons. For example, Boucharde has shown that the toxicity of the urine is diminished one half by active exercise in the open air, as the result of the increased oxidation produced by the larger quantity of oxygen taken into the body, by means of which the leucomaines or tissue poisons are consumed.

Among the most interesting results of recent investigations on this subject is the discovery of the fact that in all infectious or contagious diseases accompanied by systemic disturbances, are produced specific poisons resulting from the vital activity of the specific microbes which constitute the physical basis of the disorder. For example, the germ of consumption produces a peculiar poison, one of the effects of which when injected into the animal is the elevation of temperature. In determining the toxicity of urine in cases of pulmonary consumption, I have sometimes noted a rise of 3° or 4° in temperature during the few minutes occupied by the experiment. The injection of normal urine produces no material change in temperature.

In diphtheria, pneumonia, cholera, typhoid fever, and a large number of other infectious maladies, the characteristic symptoms of the disease have been directly proven to be due to specific poisons produced by the specific microbes upon which the disease depends. So long as these poisons are rapidly eliminated from the body, the case progresses favorably, but when the kidneys fail to do their work of elimination, dangerous or fatal symptoms appear. In pneu-

monia, for example, in the early stage of the disease, the toxicity of the urine is very greatly diminished, because of the failure of the kidneys to eliminate in proper quantity either the specific poison of this disease or those ordinarily produced in the tissues. When the crisis of the disease is past, however, if the case progresses favorably, the toxicity of the urine is found for a short time to be five times as great as in the early stages of the disease.

The poisons produced in the diseased tissues have been shown to be, in some cases at least, derived from less toxic substances normally produced within the tissues. Griffiths, of Edinburgh, has recently discovered that an extremely poisonous substance found in the urine in scarlet fever and diphtheria is derived from creatine, a very much less poisonous substance normally produced in the tissues and always present in the flesh of animals. Klebs, another eminent investigator, has shown that the poison produced in cholera nostras, to which the peculiar symptoms of this disease are due, is derived from guanidine, a slightly toxic substance always found in animal tissue.

It may be mentioned in passing, that in view of these facts the administration of flesh food, beef tea, or animal broths of any sort in cases of diphtheria and scarlet fever, is practically equivalent to administering a dose of poison, as these substances always contain a great quantity of creatine and guanidine, which are converted into the most deadly poison by the specific germs present in these diseases.

Another class of poisons to which modern physiological chemistry has called attention, and to which fully as great importance attaches in this connection as to those which have already been mentioned, has received the name of ptomaines. These substances are alkaloids which result from the action of germs upon various substances in the process of decomposition, and other forms of germ growth. They are produced by a great variety of microbes—most abundantly by the ordinary microbes by which decomposition of animal and vegetable substances is commonly produced.

Pasteur and his followers have fully demonstrated the presence in the alimentary canal of human beings, of a very considerable number of different species of microbes which are continually pro-

ducing their several poisons in greater or less quantity, the degree of their activity depending very largely upon the character of the material taken into the alimentary canal as food. Germs, like other vegetable growths, depend largely for their nourishment upon the soil in which they grow. A small field necessarily produces a small crop, so a small amount of food-material soil, or culture media, as the bacteriologists say, correspondingly limits germ growth and the resulting poisons produced. The character of the soil also determines the nature of the crop produced. Each germ possesses its individual requirements as regards soil and other conditions essential to growth. A germ which grows luxuriantly in one soil makes a feeble growth or none at all in a different soil; and a germ which in its particular soil and under favorable conditions produces great quantities of the deadly poison, when grown in any other soil, fails to produce the poison entirely, or in only very small quantities.

Pasteur and his followers have shown at least thirty or forty different species, and perhaps a much larger variety, of microbes which are to be found in the human alimentary canal. Here they are constantly producing in greater or less quantities the poisons characteristic of each species when the conditions are favorable. It has been found by experiment with these germs outside of the body that those which are the most dangerous and deadly to human life, grow with the greatest rapidity in beef-tea and other preparations of animal tissues. It is this fact which gives rise to the peculiar offensiveness of decomposing processes in animal products, especially the tissues of animals, as compared with the same processes in vegetable products. Compare, for example, the processes of decay on the apple, peach, or a loaf of bread, with those in birds, fish, a piece of beefsteak, or an oyster. That the same thing is true respecting these processes within the human body is shown by the peculiar and extraordinary offensiveness of the faeces of a carnivorous animal, as a dog or cat, when compared with the excreta of a herbivorous animal, as a cow or a horse. If the excreta of a cow or horse were as obnoxious and offensive as that of a dog, a stable or a dairy as ordinarily kept would be absolutely unendurable in proximity to human dwellings.

The decomposition of food products in the alimentary canal and the coincident production of ptomaines is one of the sources of poisons found in the tissues and in the residuum of the tissues. The amount and quality and toxic properties are almost absolutely dependent upon the dietary. A diet which gives rise to faecal matters so offensive as those of a carnivorous animal, or carnivorous man must be a prolific source of blood and tissue contamination from the absorption of these toxic and poisonous products. Evidence of this tissue poisoning is to be found in the strong odor of carnivorous animals as well as in the strong odor of the faecal matters of this class of animals. It is also a well-known fact that the flesh of vegetarian animals becomes strong and unpalatable when these animals are fed upon flesh food.

Still another source of contamination of the tissues with poisonous ptomaines through the food supply, is decomposition taking place in the food before it has been introduced into the body, as in the case of old cheese, and especially flesh in which decomposition has begun.

Dr. Segri Trombetta has recently shown by an extensive series of carefully conducted experiments, that putrefaction begins in animals within twenty-four hours after the death of the animal, even when the animal was placed in an ice chest. If left exposed to the air at an ordinary temperature, putrefaction begins within six or eight hours after death, or practically as soon as the tissues are thoroughly and completely dead, which is indicated by the presence of rigor mortis. That great quantities of food are swallowed by human beings in a very advanced stage of decomposition is evidenced by the distinct taint possessed by the greater portion of beefsteak offered for sale in the markets, the hautgout of which is much esteemed by gormands. I was informed several years ago by the manager of one of the largest abattoirs in Chicago that the so-called "Christmas" meat sold by that establishment was always kept three months before being offered for sale. The amount of ptomaines present in such food can be easily imagined.

The undressed game often seen in the markets is frequently so far advanced in decomposition as to be stained green or blue by putrefactive products.

Krieger has shown that the livers of oysters and other shell-fish always contain, and sometimes in notable quantities, a poison which he has termed mytilotoxin. It is this poison which often gives rise to acute and fatal illness from the eating of shell-fish. Some persons are so susceptible to this poison that they can never eat shell-fish without suffering serious consequences.

Sometimes, also, the tissues of animals contain specific poisons in addition to those referred to in consequence of disease from which they were suffering at the time of death.

In view of the above facts the inquiry may arise: How is it possible for human beings to live at all, especially those who consume flesh food? The answer is to be found in the fact that nature has supplied us with remarkable means of defense against both microbes and their poisonous products.

The body defends itself against germs by means of the germ-destroying property of certain of its cells. The white blood corpuscles, by means of a property termed phagocytosis, are able to capture germs found in the blood and destroy them. This property is also possessed to a high degree by the giant cells found upon the surface of the small intestine. It is through the activity of these cells that we especially depend for protection against the myriad of microbes which invade the alimentary canal. It has recently been determined, also, that the blood serum possesses the power to destroy microbes to a very remarkable degree.

The poisons produced by microbes, and to a great extent those produced in the body itself, are destroyed by the liver. This poison-destroying property is, indeed, one of the chief functions of the liver. Bouchard and other investigators have shown that an animal deprived of the influence of the liver requires twice as large a dose of strychnia, nicotine, and other poisons, to produce death, as is required when the liver is intact. This poison-destroying property of the liver is found to depend upon the glycogen, or liver starch, contained in its cells. When glycogen is absent, the protective power of the liver is lost. It is for this reason that poison, or a toxic drug, administered when the stomach is empty, is much more powerful in its effect than when adminis-

tered after a meal, twice as large a dose being required after a meal as before.

The significance of these facts in relation to vegetarianism is apparent when we take into consideration the fact that the germ-destroying capacity of cells and the blood serum, and the poison-destroying property of the liver, are not unlimited in their capacity. The blood cells, intestinal phagocytes, and blood serum can destroy a certain number of germs, but an indefinite number overwhelms them.

The Ice Bag.—There are probably few persons who are acquainted with the great value of the ice bag, especially in the treatment of acute inflammatory conditions. It is useful in the early stages of all acute inflammations, such as pneumonia, pleurisy, peritonitis, pelvic cellulitis, erysipelas, etc. It must be remembered that the ice bag should be used only in the first stages of the disease. At this period it checks the growth of the microbe upon which the inflammation depends; and by lessening the blood supply, prevents in a large measure the exudation and other mischievous processes which accompany acute inflammation. The ice bag may well replace in the early stages of inflammation, the time-honored poultice, which is at best an unclean remedy, possessing no other virtue than that of moisture and warmth.

It is important to remember that cold has a depressing effect, hence the application of the ice bag should be carefully watched. Except when the application is not made to the abdomen, or very fleshy parts of the body, one or two thicknesses of flannel should intervene between the bag and the skin, so as to prevent chilling the skin to such a degree as to produce sloughing. It is also well to remove the bag every two or three hours and apply a fomentation for fifteen or twenty minutes.

In most acute inflammations, the application of the ice bag must be limited to the first twenty-four or thirty-six hours, at the end of which time, and sometimes before, the ice bag should be replaced by cloths wrung out of cold water, and the application of heat should be very frequent, say every two or three hours. After two or three days, continuous warm applications should be used in place of the ice bag.

TRANSLATIONS AND ABSTRACTS

[THE articles in this department are prepared expressly for this journal.]

CRITICAL EXAMINATION OF THE TREATMENT OF CHRONIC RHEUMATISM.

BY PROF. DUJARDIN-BEAUMETZ, M. D.,

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In a preceding article I have remarked in relation to the treatment of acute articular rheumatism, that the medication employed in these cases is practically unanimous; one may say in fact that this affection has a specific treatment. Unhappily, this cannot be said with reference to the treatment of chronic rheumatism. The question of the treatment of chronic rheumatism has always been obscured by the fact that under this name have been confounded several diseases which have in common only the one symptom of chronicity, the attempt having been made to cure by a single remedy, affections of different origins.

A general view of the different maladies to which the name *chronic rheumatism* has been applied, shows us that these different disorders may be grouped under three proper heads:—

1. The rheumatism described for the first time by Landré-Beauvais in 1800, and well studied by Charcot and his school, characterized essentially by deformity of the joints,—rheumatism deformans.

2. In the second group we have articular rheumatism, with chronic marks following acute rheumatism, and rendering useless the affected limb.

3. Finally, we have multiple rheumatic manifestations of a chronic character.

Let us examine each of these groups, and endeavor so far as possible to fix their precise limits.

In rheumatism characterized by deformity, we see a special development of the disease. Acute articular rheumatism does not occur in this class of cases, neither do we observe cardiac lesions affecting individuals who are feeble and debilitated.

Deforming rheumatism is, as has been said, the gout of women. Its march is

progressive, and when a deformity has once been acquired, no tendency to cure is observed, but rather, on the contrary, a progressive aggravation of the deformity. In view of a course so different, it is easy to comprehend the reason why general pathology has placed chronic rheumatism among maladies of nutrition, while acute rheumatism is grouped with infectious maladies.

In chronic rheumatism following acute articular rheumatism, deformities are not observed, but there develops a dryness of the articular surfaces; the muscles of the affected joints atrophy, producing a more or less pronounced functional inactivity. The disease advances by leaps. It sometimes recedes under the influence of special therapeutics, only to reappear, and nearly always preceded by an acute attack. In these successive attacks the heart may be affected, and the articulations may undergo more or less extensive modifications.

In the third group we find patients suffering from what we term the arthritic or rheumatic state. There may be few or no joint symptoms, but muscular pains, multiple neuralgias, derminalgia, congestive phenomena, etc., the habitual group of symptoms presented by rheumatics, and which constitute a state of chronic disease to which has also been given the name of chronic rheumatism. A point upon which I have for many years insisted in my clinic, is, that in order to establish precise therapeutic indications it is necessary at first to make a precise diagnosis. If the diagnosis is obscure and uncertain, the therapeutics will also be uncertain and indecisive.

The treatment of deforming rheumatism must be exclusively directed against the disorders of nutrition. The arsenic and the iodides appear to give, in these cases, the best results; not that they operate directly upon the rheumatic element, but because they combat the condition of dystrophia to which the cause of the articular rheumatism has been attributed. □ □ □

Arsenic may be administered under the form of Fowler's solution, the arsenite of soda, or arsenious acid. Formerly Guéneau de Mussy recommended very highly the employment of arsenical baths in the treatment of deforming rheumatism. This was a therapeutic illusion, for it is to-day demonstrated in a very posi-

tive manner that the cutaneous surface, when it is intact, does not absorb medicated solutions.

Often, following the arsenical treatment, we see painful phenomena become more acute. It is then necessary to abandon the arsenic, and resort to iodine and the iodides. Lasègue preferred tincture of iodine, which he gave after meals, in sweet wine, in doses of five to twenty drops, and even more, reaching in one case the dose of six grams (one and one half drams) in twenty-four hours.

I do not recommend the employment of this method. Iodine is not superior to the iodides, and when mixed with wine, it always irritates the stomach. We must, then, prefer the iodides. It is necessary to avoid too large doses, and one gram (15.4 grains) daily is the average quantity to employ.

Grasset, who with good reason has divided chronic rheumatism into many groups, associated bromine with iodine. He advised the following solution, of which he gave a tablespoonful at each meal:—

Iodide of soda.....	10 grams
Bromide of soda.....	20 "
Chloride of soda.....	40 "
Water.....	300 "

He alternated this solution with the following, giving the same dose:—

Chloride of gold and soda.....	0.10 grams
Water.....	300.00 "

I have had no personal experience with the employment of chloride of gold and soda in the treatment of rheumatism. It is a stimulant to nutrition, and modifies sensibility, and on *a priori* grounds it may be supposed that it is indicated; but it is a very irritating drug, and when employed, it is necessary to observe with very great care the effects upon the digestive fluid.

Outside of these two medicaments, arsenic and the iodides, there is little to choose in relation to the internal medication of deforming rheumatism. It may be mentioned that the salicylate of soda and its *succedanea*, which constitute, as we have seen, the specific medication of acute articular rheumatism, is of no value in these diseases; however, antipyrine, phenacetine, and exalgine often give relief in the painful periods of this form of rheumatism. But it is through anal-

gesic medicaments that these substances act, and not through a special action upon the primary elements of disease. Phenacetine especially has given me good results in the painful periods of nodular or deforming rheumatism.

In the experiments which I undertook in 1888 with the phenacetines, which are recorded in the thesis of my pupil, Gaiffe, I demonstrated the power of analgesic action of paraacetphenetidine in a dose of 50 centigrams (8 grs.) two or three times a day in powder. This drug is not soluble.

To this internal medication it is necessary to add a special dietary, which should be generous in character and should include the use of milk during periods when the patient is submitted to the iodine treatment. The system of treatment is completed by a course of external medication, of which massage, electricity, and baths constitute the essential part. These means play, in the cure of deforming rheumatism, only a secondary role. For my part, I have never, in this sort of rheumatism, seen deformities recede after being once acquired, and all that we can hope to obtain in these cases, is to prevent the disease from progressing and invading other articulations.

We have very little control over rheumatism deformans, all remedies, even the most active, having failed. Sometimes in the course of the disease we see long periods when it makes no progress; then the disease again advances without our being able to say positively that the remedies which we have applied have had any special influence in controlling the malady.

Chronic rheumatism, by means of its chronicity, and by the uselessness which it induces in the affected limb, approaches closely to rheumatism deformans. It may be distinguished from the latter, however, by the following effects:—

1. It follows attacks of acute articular rheumatism.

2. The changes which accompany it are not confined to articulations, but affect also the muscles which undergo atrophy with extreme rapidity.

Most frequently this variety of chronic rheumatism advances by leaps. An attack of articular rheumatism is followed by pain and the loss of mobility of the

joints. Then at the end of a variable time, some months, the parts return to their normal state, or a new attack of articular rheumatism occurs. This process may be repeated during many years until complete helplessness results.

But there are some cases in which this rheumatism is, so to speak, chronic from the outset. It begins then with the febrile intensity of acute articular rheumatism, but soon the articular pains become localized; the articulations become deformed, and in spite of the thoroughness with which the salicylic medication has been employed, the patient has received little or no benefit in these cases. I believe, with Friedlander, that the rheumatism affects the spinal cord. There is, in fact, a close analogy between this sort of chronic rheumatism and the articular deformities which Charcot and his school have so well described in cases of tabes. Here I believe therapeutics may intervene with some success, for although the salicylic medication does not arrest the evolution of rheumatism, yet in cases of articular rheumatism it sometimes relieves the patient. Even this medication acts as a preventive of new rheumatic attacks. Thus in these cases I give in chronic periods one to two grams per day of salicylate, or, preferably, I employ asaprol, and sometimes, but rarely, phenacetine.

Certain drugs have also been recommended in this form of rheumatism, which are especially employed in acute rheumatism, but which also sometimes act favorably in the chronic periods of rheumatism, as a means of preventing relapse. Among these remedies there is one which to-day is very popular, although it is a secret remedy. It is Pistoia powder. The following is the composition of this powder, according to Chastaing, who made a micrographic analysis of it:—

Powder of colchicum bulbs.....	20 grams
" " bryonia root.....	10 "
" " betoine.....	50 "
" " gentian.....	10 "
" " camomile.....	10 "

To be divided into one-gram powders, of which two are to be taken daily.

I think that the efficacy of this powder results from the persistence with which patients take the remedy. Some cases of poisoning have been attributed to this remedy, which I never employ, not wish-

ing to prescribe a secret remedy. I speak of it here only because of its great popularity.

There exists still another remedy which has been highly valued in these cases of rheumatism. It is the flower of the bean. I confess I have no precise knowledge relating to this remedy, but it has this advantage over the powder of Pistoia, that it can do no harm.

But the cure of this form of rheumatism essentially requires external medication, and massage, electricity, and baths are especially applicable. I place first in the list, massage, methodically but prudently employed in the intervals between acute attacks. Massotherapy combats not only the functional inactivity of the articulations, but especially the muscular atrophy which accompanies these forms of rheumatism. Massage not only affects the circulation, but more especially the muscular groups which surround it. I have less confidence in electricity, which addresses itself only to muscular atrophy. It is easily understood that by means of continuous or slowly interrupted currents the state of atrophied muscles may be favorably modified.

Hydrotherapy is unquestionably useful. The local application of mud, from whatever place obtained or wherever carried, has a real action in these forms of chronic rheumatism, and in experiments made in my hospital service some years ago by Dr. Barthe, of Sandfort, I have seen very happy results obtained from Dax.

Although vapor baths and dry sweating have been strongly advised in chronic rheumatism, I believe they are little indicated in the form which we are considering, and that, specially because they weaken the patient by the too abundant skin secretion.

In the dietary of these patients I especially recommend the legumes. I believe that too large a variety of meats, by unduly exciting the digestive functions, are unfavorable. Finally, meats possessed of a "hautgout" are also contra-indicated. It is especially important to increase the activity of the different excretory organs, particularly the digestive canal and the kidneys. For the first, it is necessary to regulate the bowels, and to induce one or two stools daily by appropriate laxatives. For the second,

administer diuretic drinks, such as white wine and milk.

In conclusion I will say a few words respecting the last variety of chronic rheumatism. In this form, it is the dia-thesis which it is necessary to combat. While the salicylates give excellent results in the acute periods of rheumatic attacks, it is especially the mineral waters and dietetics which are of paramount importance here. However, antipyrine, and especially phenacetine, may be placed beside the salicylate of soda and asaprol as a means of relieving the muscular pains and neuralgias of rheumatic origin.

One of the inconveniences of antipyrine which should be well recognized, is its decided action in diminishing the urinary secretion. In the rheumatic we must never forget that we should, so far as possible, favor elimination; and as the kidney is the most important of the eliminative organs, we should endeavor to increase the quantity of the urinary secretion. By the administration of laxatives, the stools should be made abundant and semi-liquid. We have the same object in view when we endeavor to increase the activity of the skin in rheumatics, hence the indication for the employment of vapor baths, Russian baths, and hydrotherapy in general. A tepid douche, or alternate hot and cold douches, or even a cold douche, often acts sufficiently in the treatment of this diathesis, by regulating the functions of the skin and preventing the attacks of sweating, which, by promoting evaporation, is frequently the cause of symptoms more or less serious.

Side by side with thermal treatment must be placed the dietetic treatment of this disease. Although we do not as yet possess all the positive knowledge respecting the action of the different toxines introduced into the digestive canal or manufactured in it, nevertheless we very well know that these poisons are all a cause of aggravation of the disease in rheumatics; hence I believe it to be necessary to suppress meat diet and all substances likely to contain toxic ptomaines. No game should be taken; fish should be eaten very sparingly, and only when perfectly fresh. Care must be taken to avoid the use of mollusks and crustaceans, oysters, lobsters, etc. The same must be said of mushrooms and old

cheese. On the contrary, fresh vegetables, plain porridges, purees of peas, beans, and lentils, milk, fruits, etc., may be freely used. This is practically a vegetarian regimen, of which I am one of the warmest partisans,—from a therapeutic point of view, let it be understood,—and I have with pleasure understood that Cazalis, of Aix, has adopted these ideas in the interesting work which he has published upon the hygiene of rheumatism and gout.

I may summarize the facts which I have presented as follows: In chronic rheumatism deformans, little is to be hoped for from any remedies of any sort, even the most active. The only hope is that the progressive march of the disease may be arrested by treatment addressed to the nutrition (arsenic, iodide of potash, hygiene). In true chronic rheumatism a therapeutic action much more certain is obtained by salicylate of soda and its *succedanes*, and in particular by asaprol in acute attacks and as a prophylactic treatment. Massage is of great utility, and also dietetics for the rheumatic diathesis. Most important of all are hygiene and hydrotherapy. Excretion may be facilitated by means of diuretics and laxatives. To aid the action of the skin, warm or cold douches, or the shocking of a hot and cold douche, vapor baths, and Russian baths may be used. Toxic ptomaines must be excluded from the dietary, which should be as nearly as possible vegetarian in character.

For Ringworm.—Iodine has been found to be one of the most effective agents for destroying the parasite upon which this disease depends. An excellent method of applying it is the following: Thoroughly cleanse the scalp with soap and water. Dry perfectly, then apply a solution of one part of pure iodine in thirty parts of flexible collodion. Renew the application each day for four days. At the end of fifteen days, remove the collodion, wash the scalp first with soap and water, then, after thoroughly removing the soap, wash with a hot solution of bichloride of mercury, 1-2500. After allowing the bichloride solution to remain in contact with the scalp for half an hour, wash with pure water, dry, and apply vaseline or zinc ointment. If necessary, repeat the application.

Dampness as a Cause of Disease.—Dr. Ascher, a German sanitary officer, has been making a careful study of the relation to health of dampness in dwellings. It has long been known that damp houses are insalubrious, but exactly why has not been so well understood. The investigations which this physician has made seem to show that the unhygienic character of the damp dwellings is due, not directly to the dampness itself but to the fact that the dampness gives rise to the development of various sorts of microscopic vegetable growths, by which the air is contaminated, and which may possibly induce directly some forms of disease in the human body. This author insists that the walls of dwellings should be made of porous material, so as to prevent the precipitation of moisture on the inner surfaces. He advises that the walls should not be painted or varnished, but left so that they may be readily penetrated by the air, and thus kept dry.

Blood of the Viper.—MM. Phisalix and Bertrand have recently shown that the blood of the viper contains the same toxic elements as its venom, being furnished, without doubt, by an internal secretion of its glands. The presence of these poisonous substances in the blood of the viper is considered to be the explanation of the fact that its venom is not poisonous to itself.

Influence of Mental Work upon the Elements of the Urine.—Dr. H. Thorion, of Paris, has recently published the results of a series of investigations undertaken upon himself for the purpose of determining the influence of mental work alone upon the urine. His conclusions are that intellectual activity increases the quantity of urine, and to a marked extent the amount of lime contained in the urine. There is a slight increase, also, in the amount of chlorine and magnesia. The density of the urine is decidedly decreased, and there is also a slight decrease in the total amount of sulphuric acid. No influence upon other elements of the urine was observed.

Studies of this sort are important. It is surprising that so little is done in this country in the prosecution of studies of this character. The results obtained by Dr. Thorion are very meager. It will be

noted, moreover, that they relate wholly to those elements of the urine which the investigations of Bouchard, Rogers, and others have shown to be, from a physiological sense, the least important. The method of determining the toxicity of the urine so admirably elaborated by Bouchard, is unquestionably the best means of determining the influence of the various forms of functional activity upon the urinary secretion.

Olive Oil and Chloroform for Gallstones.—It is now generally understood that olive oil taken in large quantities is a useful remedy for facilitating the passage of gallstones through the common duct into the intestine. Numerous cases have been reported in which this remedy has succeeded. In some cases, doubtless, the round, greenish-colored masses which may be found in the stools of a patient who has taken considerable quantities of olive oil, may be mistaken for gallstones by one who is inexperienced in detecting these calculi; but a sufficient number of well-authenticated cases in which actual calculi have been observed, have been recorded to give the remedy a standing sufficient to make it worthy of trial. The efficiency of the remedy may be greatly increased by simultaneously administering chloroform in medicinal doses. Opium is to be avoided in these cases, for while it relieves pain, it at the same time increases the constriction of the duct, whereas chloroform both relieves the pain and relaxes the involuntary muscular fibers of the duct, thus facilitating the passage of the calculi.

Water Purification by the Alum Method.—It has long been known that the addition of small quantities of alum to impure water has the effect to cause the precipitation of its impurities, and this method has been used, sometimes on a large scale, as a means of purifying water. Max Teich, of the Institute of Hygiene of Vienna, has recently made a study of the value of this method, and finds that while the method offers no objection from a sanitary standpoint, and is capable of killing cholera germs, typhoid fever germs are not materially affected by it, and treatment of the water for at least twenty-four hours is necessary to destroy the germs of cholera.

The Treatment of Ascites.—A discussion of the subject, a few months ago, in the *British Medical Journal*, brought out the following practical points respecting the proper treatment of this condition as the consensus of opinions of a number of eminent physicians. There are three objects to be sought:—

1. To prevent the increase of connective tissue, and the consecutive atrophy.
2. To antagonize the tendency to anæmia.
3. To relieve the abdominal and thoracic viscera from pressure.

1. The first of these objects is to be accomplished by avoiding alcohol and all stimulating foods, such as mustard, pepper, and other condiments. Salt should be taken in sparing quantities, and flesh meat should be avoided in consequence of its stimulating character and the imperfect intestinal asepsis, owing to the deficiency of the bile.

2. The anæmia is to be combated by an abundance of nutritious, digestible food, and by the aid of such remedies as will aid digestion—particularly hydrochloric acid and preparations of iron.

3. Purgatives and diuretics should be avoided, as they are the most expensive method by which the ascitic fluid can be removed. One writer asserted that "purged to death" would be an appropriate record in many cases of ascites. Diuretics are equally inefficient with purgatives. The only rational method is tapping. Most authors recommend that tapping should be delayed as long as possible. Austin Flint, however, recommended repeated tapping, reporting ten cases of recovery.

Murchison, who formerly recommended delay, finally pronounced in favor of tapping as soon as the "abdomen is moderately distended by fluid."

Continuous drainage has not given satisfactory results, and is more likely to lead to infection than tapping done with aseptic precautions.

Gonorrhœa.—Reverdin recommends, as the best method of treatment, irrigation of the urethra with a 1-5000 solution of permanganate of potash. A flexible catheter is used for the application to the urethra, and about three pints of the solution are used at each treatment, which should be repeated twice daily, with the patient in a standing position.

The Internal Use of Antiseptics

Condemned.—Triwousse recently published in *Wratch* an article in which he takes a strong stand against internal antiseptic treatment, which he regards not only as useless, but as positively injurious in certain circumstances, particularly in cholera. "We have shown," said he, "that especially in relation to the treatment of cholera the principle of sterilizing the digestive tract and thereby rendering inoffensive the tox-albumens which accumulate within the abdomen, is an error. Before proceeding thus, we should ascertain whether the poison still exists in an active state. If it does not, we should cease to combat the cause of the disease. The physician being always called at the time when the disease is already established, there arrives a period when the treatment of the infection is probably no longer useful, for at a certain period in this disease the microbes become inoffensive, a sort of immunity being established. If this were not true, how could we comprehend the resistance of a weak patient to the microbes which have infected him when he was in full health?"

"We are ignorant, it is true, at what moment this immunity begins. The only thing we are certain of, is that it exists."

Further, Triwousse recalls that certain microbes, those of cholera and of typhoid fever for example, lose, in the human body, a portion of their virulence, which they are able to re-acquire only by passing through water, air, soil, etc. Then at the time when we observe the disease, the microbes and other toxines are no longer dangerous. Disinfection is then useless; further, it may be dangerous for the following reason:—

"Parallel with the noxious action of microbes is developed the salutary action of immunity. Some bacilli which produce the toxines, secrete at the same time the bacterio-toxine. The moment when we are able to come to the relief of the patient, he is already at the period of his disease when the formation of these bacterio-toxines begins. In killing the microbes which have now become salutary in their influence, we may also kill the patient. We should, instead, treat the patient, or rather come to his aid by the production of immunity."

BACTERIOLOGICAL NOTES.

[THE notes appearing in this department are abstracts or translations prepared expressly for MODERN MEDICINE AND BACTERIOLOGICAL REVIEW, from original sources.]

THE ACTION OF LIGHT UPON THE DIPHHERIA BACILLUS.

A RECENT number of the *Archives de Medicine Experimentale* contains an article by Dr. Ledoux-Lebard, detailing the results of experiments undertaken by the author for the purpose of ascertaining to what extent sunlight is effective as a means of destroying the microbes of diphtheria. The special purpose of the experiments was to determine whether the influence of diffused light is destructive of germs as well as the direct rays of the sun, as shown by Roux and Yersin. The conclusions to which he arrived are as follows:—

1. The action of diffused light does not prevent the development of cultures of the diphtheria germ, either at a temperature of 95° or at ordinary temperatures. The direct rays of the sun arrest the development of the germs, and sterilize the culture medium in a few days. Diffused light has no bactericide power in relation to bacilli in neutralized bouillon, but has a marked bactericide power in relation to diphtheria bacilli in distilled water.

2. Diffused light kills dry cultures of diphtheria spread in thin layers, in less than two days (twenty-four hours' exposure to light).

3. The direct light of the sun acts in the same manner as diffused light, but with greater rapidity.

4. The bactericide power of light in relation to the diphtheria bacillus is due almost entirely to the most highly refracted rays of the spectrum.

5. The less refracted rays of the spectrum have little or no bactericide power.

6. Light, by virtue of its bactericide power, sterilizes in less than two days the bacilli of diphtheria, either moist or dry, and hence is a prophylactic agent against diphtheria.

7. In diphtheritic membranes exposed to the light, many of the bacilli are reached only by the light after it has lost a part of its intensity, and hence retain their vitality and virulence for a long time.

8. Light may be utilized in the disinfection of places contaminated by diphtheria.

The persistence of the virulence of the germs of diphtheria is well known, but a careful study of the classical examples of extreme persistence of this virulence shows that in the majority of cases, the contaminated objects had remained a long time protected from the light. In one case, for example, a brush which had been used for making applications to the false membrane of a child, communicated diphtheria to the father four years afterward, having been, in the mean time, wrapped in paper and placed in a drawer. In other cases, the means of contamination has been clothing which had been worn by a diphtheritic patient, and which had been protected from the light in a chest or closet. In still other cases, the disease has been communicated by the secretions of the diphtheritic patient who soiled the floor, and thus the germs were permitted to enter into the cracks between the boards. The prolonged exposure to the sunlight, of objects which have been in contact with diphtheritic patients, far from any human habitation, is an excellent means of rendering certain the action of disinfectants properly so called, although this action is less rapid than in the case of measles or scarlatina.

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Tuberculous Milk.—Duclaux, in the *Annales de l'Institut Pasteur* for November, reviews the subject of tuberculous infection through the medium of milk. He calls attention to the investigations of M. Frijs, of Copenhagen, who, among a lot of thirty cows, the milk from which was regularly sold, found nearly all affected by visible signs of disease. One animal was almost too weak to stand. The milk furnished by this animal was a yellowish, watery secretion, but was, almost until the last day of the animal's life, mixed with the common product of the herd and sold for human consumption. The danger of infection through milk is, by this writer, believed to be so great that there is no safety except in avoiding the use of milk which has not been submitted to a temperature sufficient to destroy the tubercle bacilli. It is safer that the milk should be boiled, but a temperature of 160° is sufficient to kill all disease germs.

A New Role for Bacteria.—M. Tischkin maintains that the so-called carnivorous plants are incapable of digesting albumen, but that their sole characteristic property resides in the ability to absorb albumen which has been digested by bacteria. These are the conclusions which he draws from a careful study of the subject:—

“1. The disintegration of albuminous compounds by the secretions of carnivorous plants is due to the growth of micro-organisms, principally bacteria.

“2. Micro-organisms possessing the power of dissolving albuminous compounds always vegetate in the secretions of completely developed carnivorous plants.

“3. The disintegration of the albumen does not commence at the moment of the secretion of the fluid, but only after micro-organisms have developed in sufficient numbers in the secretion.

“4. The micro-organisms found on the leaves of carnivorous plants come principally from the air, though they may be derived from other sources.

“5. The name ‘carnivorous’ plants is to be understood in the sense that the plants only assimilate the products which the lower organisms have set free.

“6. The role of the plant itself is only to furnish a medium in which certain micro-organisms may live and develop.”

Poisoning from Veal.—A German physician, Dr. Van Ermengen, recently investigated the cause of an outbreak of gastro-intestinal inflammation involving fifty-six persons, four of whom died. The suspected cause was the flesh of two calves. On investigation it was found that the calves, when killed, were afflicted with a sickness of some sort. Examination of a portion of the body of one of these animals, and of the liver, spleen, and intestines of one of the victims of the poisoning, revealed a germ closely resembling those known to be the cause of hog cholera.

Leprosy not Hereditary.—The rapid development of this disease in the Sandwich Islands and in India, and the death of Father Damien, resulted in the establishment, by the English Government, of a Leprosy Commission to investigate this disease. They found that the first case of leprosy in the Sandwich Is-

lands occurred in 1830,—sixty-four years ago,—since which time it has increased until at the present time there is one leper to every thirty healthy persons in the Sandwich Islands. There are at the present time more than 1000 lepers at the Leper Asylum on the island of Molokai. In India there is one leper to every 2000 persons. By careful inquiry, the Commission learned that of healthy persons who associated closely with lepers, eating and drinking with them, 700 in 10,000 became lepers. Even the earth trodden by lepers is found to contain the germs of this disease.

The Commission concludes that leprosy is not hereditary. They believe that the soil and air of India have become so charged with the germs of this disease that any person who is susceptible to it is likely to come in contact with it somewhere at some time, and become infected by it.

Recent investigations seem to show a possible relation between this disease and tuberculosis, or what is commonly known as consumption. The germs of the two diseases are so nearly alike that it requires an expert to distinguish them; they do not differ more than do the germs of leprosy obtained from different localities.

Bank Bill Microbes.—Acosta and an associate have found bank bills infected with microbes to the extent of many millions on every bill which has been in circulation any length of time. A particular microbe, which they found to be capable of killing rabbits and guinea-pigs with great rapidity, they have named *bacillus billet de banques*.

Diagnosis of Diphtheria.—Dr. Wethered recently reported to the London Medical Society the results of a study of twenty-six cases of diphtheria and sixteen of follicular tonsilitis. The study was made by means of bacteriological cultures upon glycerine agar-agar in large test-tubes. The test-tubes were then placed in an incubator at a temperature of 73° C. for twenty-four hours, when the cultures were examined microscopically. In the sixteen cases of follicular tonsilitis, staphylococcus only was found. In the twenty-six cases of diphtheria the Loeffler bacillus was found in fifteen cases, streptococcus in three cases, and staphylococcus in eight cases.

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THE TREATMENT OF HYPERPEPSIA.

THE investigation of functional disorders of the stomach by the precise method of determining the exact amount and the quality of the digestive work done, has enabled us to find a basis for rational therapeutics such as could not have been realized without the aid of a precise method of diagnosis.

In hyperpepsia, sometimes termed hyperchlorhydrie, there is an increased production of hydrochloric acid. This increased production of hydrochloric acid is not always attended by an increased acidity, owing to the fact that in many cases the chlorine, although produced in excessive quantity, enters into combination with ammoniacal albuminoid substances, which destroy its acid function. In these cases, notwithstanding the excessive amount of work done by the glands of the stomach, the digestive product is vitiated in character, so that the work of the stomach is almost valueless. Fermentation from the imperfect digestion of starch, and as a consequence, flatulency and acidity, are symptoms which are present in more than half of the cases of hyperpepsia. Constipation, hemorrhoids, emaciation, ulceration of the gums or other portions of the buccal membrane, are also common symptoms.

Examination of the stomach fluid made in the case of hyperpepsia shows an excessive amount of secretion of hydrochloric acid. Notwithstanding the fact

that the amount of work done is excessive, it is usually poor in quality, as will be shown by comparison of the figures in the following case with the normal figures :—

Total acidity, (A)	350 gms. (A') 366 gms. (.180-.200 gms.)
Coefficient, (α)	.73 (.86)
Total chlorine, (T)	.496 gms. (.300-.340 ")
Free HCl, (H)	.256 gms. (.025-.050 ")
Combined chlorine, (C)	.128 " (.155-.180 ")
Fixed chlorides, (F)	.112 " (.010 gms.)

It will be noticed in this case that the quantity of combined chlorine, which represents the useful work of the stomach, is only .128, notwithstanding the enormous amount of chlorine secreted, while the normal amount required is .155 to .180 gms. The quantity of free chlorine, on the other hand, is more than ten times the minimum quantity and five times the maximum quantity found in health. The coefficient of efficiency indicates that the quality of combined chlorine, small as it is in quantity, is depreciated in quality. This is readily accounted for from the fact that the patient was thin in flesh and somewhat anaemic.

The indications for treatment in hyperpepsia are the following :—

1. To lessen the amount of hydrochloric acid secreted.
2. To improve the quality of the digestive work done.
3. To suppress abnormal fermentations.

Experience in the treatment of several hundred cases of hyperpepsia by the aid of precise methods of diagnosis, has given us increasing confidence in the following measures for the accomplishment of the several objects indicated :—

1. To diminish the abnormal activity of the stomach glands, withhold all stimulating foods, mustard, pepper, ginger, spices, together with such irritating foods as pickles, horse-radish, radishes, raw onions, rich gravies and sauces, salt meats, etc. These must be entirely discarded from the dietary. Coarse vegetables must also be avoided. Meat must be absolutely prohibited. The bill of fare must consist of such bland articles

of food as will require little work on the part of the stomach. Boiled rice, soft boiled eggs, milk, custards (without sugar), stewed fruits, grains in nearly all forms, if simply prepared and thoroughly cooked, peas, beans, and lentils in the form of soup or puree, and lastly, but not least, kumyss prepared without the use of sugar or yeast, so that it contains no alcohol,—these are the most suitable foods for patients suffering from hyperpepsia.

2. The quality of the digestive process will be likely to improve in proportion as the hypersecretion of chlorine diminishes. The lessened quantity of gastric juice will insure in most cases an improved quality. The application of heat to the spine by means of a fomentation or a hot-water bag, is an excellent means of reducing the congestion of the mucous membrane of the stomach, and hence of lessening the secretion and at the same time improving the quality of the work done. A hot and cold trunk pack taken before meals is an excellent remedy for the same purpose. A hot-water bag is placed over the stomach, and the trunk wrapped in a large towel or a folded sheet wrung out of cold water, well covered with a woolen blanket so as to prevent chilling.

3. Vicious fermentations, which may assume the form of either lactic acid, butyric acid, acetic acid, or alcoholic fermentation, require lavage, or washing of the stomach with pure water with an antiseptic solution. A solution consisting of one dram of carbonate of soda, with fifteen grains of salicylic acid to a quart of water, answers a very useful purpose. After the washing of the stomach, the patient should take twenty or thirty grains of subcarbonate of bismuth. Great care must be taken to avoid all articles of food which encourage fermentation, such as milk, butter, cheese, fermented bread, cane sugar, pastries, sweet cake, etc. Remedies calculated to produce intestinal asepsis are also of value. We have made use, for several years, of charcoal pre-

pared from wheat, preferring this to other forms of charcoal, not only on account of its great absorbing power, but of the alkaline phosphates and carbonates which it contains. The patient should take, after each meal, a powder consisting of one dram of wheat charcoal, fifteen grains of sulphur, and eight or ten grains of salicylic acid. Other antiseptics, as salol, salophen, and benzo-naphthol, are also of value. In cases in which there is great excess in the secretion of hydrochloric acid, hydrate of magnesia or carbonate of soda may be advantageously added.

The general health of the patient must be considered, as well as the condition of the stomach. Cool morning baths followed by oil rubbing, massage, general applications of electricity, moderate exercise, and an eliminative bath once or twice a week, are measures of importance.

In addition to the measures above mentioned for relieving the condition of the stomach, we have found great assistance in the use of the galvanic and the sinusoidal currents. The galvanic current may be applied either over the stomach and to the spine opposite, or with one electrode at the epigastrium and the other over the inferior cervical sympathetic ganglion. When there is much tenderness in the epigastrium, as is likely to be the case, the positive pole is applied at this point, and the negative upon the spine.

THE DANGERS OF MILK.

THE fact that milk, as ordinarily furnished, contains millions of microbes is now so generally known that in the cities, at least, and perhaps also for the most part in the rural districts of this country, where mothers have the advantage of instruction by hygienic physicians, it may be supposed that the practice of submitting cow's milk to some sort of sterilization before feeding it to a young infant, is quite generally practiced.

From observation, we are led to believe, however, that most mothers, perhaps most physicians also, place too much confidence in the sterilization of milk, whether it is thoroughly boiled or submitted to the method known as Pasteurizing. Neither the Pasteurizing nor the boiling of milk destroys all the microbes which it contains. Even when kept on ice, milk which has been thoroughly boiled, after two or three days gives evidence of decomposition, which can be readily detected by the smell or taste. This is, of course, due to the fact that the spores of microbes capable of setting up decomposition processes in the milk, have survived the process of sterilization.

A more minute examination of milk which has been sterilized will show that within six or eight hours, under ordinary conditions, there is found to be a decided increase in acidity. The period when acidity is first noticed may be said to be the end of the period of incubation of the living spores contained in the milk, as the acidity is evidence of the growth and bacteriological activity of the germs.

When germs begin to grow, they will begin also to multiply and increase with very great rapidity. It is hence apparent that if the purpose of sterilizing milk is to diminish the number of microbes it contains, then sterilized milk is wholesome only during the period of incubation and before acidity appears. It is, of course, possible to prolong the period of incubation indefinitely by repeating the sterilizing process at sufficiently frequent intervals, or by reducing the milk to a temperature at which microbial activity cannot occur.

Every mother who is feeding a young infant with cow's milk should be supplied with litmus paper, by which the acidity of the milk may be tested, so that she may know when the food administered is of a character more likely to result in disease than in healthy nutrition. The perils to which infants fed upon cow's

milk are almost universally exposed, is evidenced by the great fatality which attends the artificial feeding of young children.

Dr. H. C. Plaut, of Leipzig (*Zeitschrift für Hygiene und Infektionskrankheiten*), in a recent investigation of this subject, found, as a rule, that fresh milk delivered in the morning, in the cities, has already advanced beyond the period of incubation, and is unfit for use by young children. Of forty-seven infants whose supply of milk was carefully investigated, eighteen experienced digestive disorders and six died. In some instances the milk was examined before the illness of the infant, and in every case was found to be unfit for food. In most of the entire number of cases, the milk was found to be bad. It was mentioned as good in four cases.

The investigator insists that the principal cause of digestive disorders in young children, and the bad nutrition so often seen in these cases, is not to be found in the character of their homes or the care which they receive, nor in the bad conditions to which the milk is subjected after it is purchased, but in the bad handling of the milk before it is sold. He suggests the enactment of a law requiring that the milk should be cooled immediately after being received from the cow — even at the stable. This he thinks quite as important as that the home of the child should be maintained in a sanitary condition.

Brie Cheese.—We learn from an exchange, *The American Cheesemaker*, that a number of American dairy-maids have been sent over to France to study the method of making Brie cheese, and since this fact indicates that American cheese-makers are soon to be engaged in persuading the public to indulge freely in this French delicacy, our readers may be interested in the following description of this particular brand of cheese, for which

we are indebted to the journal above mentioned ; —

"Brie of good quality will present a reddish color, and will be neither puckered nor wrinkly ; when of a blue color, the cheese is less esteemed. Between five and six weeks from the commencement of its making, the cheese will be ripe. Brie is never sold till ripe, but the middlemen keep it in their cellars some time. It is the fermentation that is the most delicate part of the whole process ; the osier strainers are never washed, and it is the must on these that induces the peculiar fermentation. Pasteur is said to be studying the parasitical ferment of the preparation."

The point to which we especially wish to call attention is the fact that the cheese is sometimes red and sometimes blue, and that the strainers by means of which the curd is separated from the whey, are never washed, but allowed to become musty, and that the cheese owes its superior properties to its infection with must, or mold, from the dirty strainers. It is not surprising that cheese thus treated should be sometimes red and sometimes blue—in fact, it is wonderful that it does not present a still larger variety of colors. The red and blue colors are evidently due to parasitic molds. Prof. Pasteur, it seems, is studying these molds, and it is possible that before long the proper kind of mold necessary to convert any cheese into "Brie" will be sold in convenient packages or bottles, so that any person who is fond of "Brie" can simply buy a bottle of mold and mix with his cheese *ad libitum*. He can thus have his cheese more or less "Brie," or moldy, as he likes, and not be dependent upon the caprice of the manufacturers. In the meantime, if there are any of our readers whose mouths are watering for a delectably moldy morsel of "Brie," it is possible that arrangements might be made with the manufacturers to export a few packages of scrapings from their old

dirty strainers, by which the immediate demand may be supplied. The *American Cheesemaker* is to be commended for its frankness in dealing with the public. We hope it will continue to give us valuable information concerning the manufacture of an article of food which the *Cheesemaker* has convinced us, and we hope many others, is absolutely unfit to enter the human stomach.

Work and Longevity.—An English statistical report enumerates thirty-three persons upwards of one hundred years of age alive in Great Britain in the year 1893. The oldest of these, as usual, was a woman, whose age was one hundred and sixteen. One of the most striking facts in relation to these centenarians is that they lived lives of simplicity and industry. In commenting upon this fact, the *London Lancet* remarks :—

"If in any direction it is allowable for competitors in the race of life to dispense with self-control, it would appear that they may to a great extent use this liberty with respect to physical and mental exertion. Nature has made large allowance for the inevitable necessity of labor, and has even practically in some cases sanctioned an overstrain of energy, provided that due care be taken to conserve the vital powers by temperance in other things."

It is not useful work, but worry which kills men. Overwork of the stomach, liver, or kidneys is vastly more damaging to a man than overwork of the brain or muscles, since so long as the stomach is intact, overworked muscles may be easily repaired ; and so long as the liver and kidneys retain their integrity, the consequences of excessive brain work are easily removed by the elimination of the resulting poisons from the body. Millions die from overwork, but it is overwork at the dinner table rather than in the field, the workshop, or the counting-room. Hard work is healthful. The majority of

men, and women also for that matter, are suffering, not from overwork, but from too light work. More work is required. It may be more mental activity or more muscular exercise. Evil results from work, flow not from excessive work, but from the neglect to give each class of organs its due and proper amount of exercise.

Air Germs.—Sir Joseph Lister recently read a paper before the London Medical Society, entitled, "Essentials in Antiseptic Treatment," in which he asserted that the microbes present in the air are so attenuated that they are incapable of producing mischief in the body, being readily destroyed by the natural antiseptic action of the living tissues. He concludes from this, that atmospheric dust may be entirely disregarded in operations.

In this, Sir Joseph is certainly too hasty. He forgets that while the live tissues are entirely competent to destroy air germs, in every operation there is always more or less destruction of the tissues, so that in closing up the wound there is invariably left behind more or less of dead or dying tissue which has lost its power to destroy microbes, and which constitutes a nidus in which air germs may develop in numbers sufficient, and with such increased virulence, as will enable them successfully to attack the living tissues. Sir Joseph was perhaps too hasty in attaching paramount importance to his antiseptic spray. He seems now to be equally rash in abandoning useful antiseptic precautions. Common sense must be mingled with bacterial knowledge to render it valuable for any practical purpose.

French Coffee.—Those of our readers who contemplate visiting Paris, and are likely when there to indulge in that famous beverage, "French coffee," may be interested in the fact that a recent number of a Paris journal gives as the composition of French coffee, the following:

"Roasted horse liver, roasted black walnut sawdust, and caramel, or burned sugar." The important French coffee obtainable in this country doubtless has the same composition.

The Contagiousness of Consumption.—It is no longer a question among well-informed physicians whether consumption is or is not contagious. At the late Pan American Medical Congress, this subject was thoroughly discussed, and with practical unanimity declared to be one of the greatest importance, as expressed in the following resolution, which ought to be adopted by every State Board of Health and pressed upon the attention of law-makers everywhere:—

"Resolved, That it is the view of the Section on Hygiene, etc., that in view of the fact that tuberculosis causes more deaths than any other disease, that it is known to be communicable, especially to persons living in houses and shops with consumptives, that the attention of national, State, and municipal authorities be directed to the necessity for controlling the dissemination of the disease,—

"1. By notification by physicians and householders.

"2. By regulation of the residences of the tubercularized.

"3. By controlling their movements as far as possible.

"4. By the establishment of hospitals and homes for the infected poor."

The *British Medical Journal* recently published the following incident, which speaks for itself respecting the need of the adoption of the measures recommended in the above resolution:—

"A family of nine occupied a house inhabited ten years previously by two tuberculous patients. A short time after, although the whole family had been in splendid health, three among them showed symptoms of tuberculosis. They used the same bedroom as the former tenants. Dr. Ducor had pieces of wall paper ex-

amined, and dust from the ceiling and walls also was examined. In both cases the tubercle bacillus was found. The former occupants had been uncleanly in their habits; the sputa had dried on the walls, and the bacillus, as M. Vignal has shown, retained its vitality, and was not destroyed by infection."

A recent number of the *Journal des Connaissances Médicales* reports some cases of tuberculosis which were contracted by the new occupants of an apartment contaminated by expectorated matters of a tuberculous patient who had died there two years before.

It is apparent that too great importance cannot be attached to the disinfection of the sputa of consumptive patients and the complete disinfection of apartments which have been occupied by such a patient. The Health Officer of Manchester, England, holds himself in readiness to disinfect any room or house which has been infected by a consumptive patient.

An Educational Revolution Needed.

— That a reform in our educational methods is one of the most pressing demands of the times is a fact which seems to be recognized more or less clearly by men in all classes of society. That our present methods of education do not produce the type of man demanded by our highest ideals, as viewed either from a practical business or from a moral or religious standpoint, must be evident to a great number of people. Our educational methods are one-sided. They are, to a large extent, notwithstanding many comparatively recent innovations, mediæval in character. The many years of plodding work devoted to the study of the writings of half-civilized men who lived and died thousands of years ago, in languages which are fully as dead as the men who wrote them, is unquestionably for the great majority of those who pursue a classical course of study, a prodigious waste of effort. As Prof. Swing says (we do

not quote his exact words), "it may be very well to be able to express an idea in half a dozen different languages, but it must not be forgotten that with all these different modes of expression, there may be only one idea expressed." It would certainly be far better to possess ten ideas with only one mode of expressing them, than to be possessed of one idea with ten modes of expressing it. There is a certain discipline to be obtained by a study of the classics, and a certain utility in the etymological and philological knowledge thus derived; but for the average man this knowledge possesses so little practical value that within three years after he has received his diploma, he has forgotten by far the greater part of what he had spent seven or eight years in acquiring.

Almost the same thing can be said of mathematics. Fully half the time spent in the study of mathematics, at least if we consider a complete course in this science, is devoted to subjects which have no immediate practical bearing upon the affairs of life, or which can be utilized in the study of the sciences. To compel the student to acquire the same familiarity with the dead languages and with the subtleties of mathematical puzzles, which was expected of the student two centuries ago, when almost nothing else was expected of him, while at the same time demanding of him efficiency in the numerous other branches of human knowledge which have developed chiefly within the last half century, is in the highest degree unreasonable and absurd. When our college curriculum is so arranged as to cut off two thirds of the time now spent in the study of the dead languages, and one half the time devoted to mathematics, introducing as substitutes a more extended study of the anatomy, physiology, and hygiene of the human body, sanitary science, and manual training, and due attention to the development of the body and all its physical faculties,—when these reforms have been made, we

may rightfully expect our educational institutions to turn out men and women far better prepared for the physical, mental, and moral conflicts of life than is the average graduate of the present time.

Muscular Work and Respiration.

—The close relation between muscular activity and respiratory power is well shown in a comparison of the frog or the turtle and the bird. The lungs of the frog are a mere pouch into which air is swallowed in a manner similar to that in which warm-blooded animals drink water. In the turtle we find nothing which corresponds to the respiratory movements of warm-blooded animals. In the bird we have an enormous thorax filled with lungs of a highly developed character, which are reinforced by communicating cavities in the bones. The movements of the turtle are slow. It lives a sluggish life amid the slum and scum of some stagnant pool. The bird, on the contrary, lives a life of the greatest activity, and possesses a power of muscular exertion almost incredible. Herr Gatke asserts that godwits and plovers can fly at the rate of two hundred and forty miles an hour. The swift has frequently been seen to outstrip a lightning express train. The man of sedentary life breathes little, like the frog and the turtle. His life is on a low level. He has little capacity for useful activity because his breathing powers are undeveloped. Those who wish to live with the birds, on a high level, must develop lung capacity, which can only be accomplished by means of active, vigorous daily physical exercise. Every human being ought to work hard enough to sweat well every day of his life.

Coffee versus Digestion.—Prof. Schutz-Schutzenstein, an eminent German scientist, has recently completed some interesting experiments in relation to the effect of tea and coffee on gas-

tric digestion. He found that an artificial gastric juice was able, in eight hours, to digest ninety-four per cent of coagulated egg albumen. When tea was added, other conditions remaining the same, only sixty-six per cent, or about two thirds as much, of the albumen was digested; and when a decoction of coffee was mixed with the digesting albumen, only sixty-one per cent, or less than two thirds, of the albumen was digested. This result was believed by the Professor to be due to the influence of the tannin upon the albumen. The effect was found to be less in proportion as the infusion of coffee or tea was weaker, and the conclusion was expressed by the experimenter, that the deleterious influence of these common beverages is due, not to the thein and caffein which they contain, but to the constituent tannin, the suggestion being made that an infusion made by pouring boiling water upon the tea or coffee and allowing it to stand for a few moments, instead of boiling for some time, is less deleterious in consequence of the extraction of a smaller quantity of tannin.

This conclusion is doubtless correct, but it is equally true that an infusion thus made contains a smaller amount of thein and caffein. These substances are less easily soluble in water than tannin, and consequently the less injurious effect of the lighter infusions is not due to the fact that they contain less tannin, but that they contain less of all the poisonous properties contained in the tea leaf and the coffee berry.

Ichthyol.—This drug is proving itself to be one of the most valuable in the *materia medica*. An ointment consisting of twenty-five per cent of ichthyol and seventy-five per cent of lanolin, is the very best remedy for erysipelas. Ichthyol is also useful in rheumatism, in the form of an ointment consisting of equal parts of lanolin and ichthyol.

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PUBLISHERS' DEPARTMENT.

FERRATIN.—There have been many skeptics in relation to the value of iron as a restorative haematoic. The general law that animal organisms are unable to assimilate inorganic compounds as food, has seemed to be an insuperable difficulty in the way of the theories which have assigned to iron compounds a therapeutic value based upon their assimilability. Recent experiments made by Hayem and Winter, of Paris, and in the Laboratory of Hygiene connected with the Battle Creek Sanitarium, have shown that chlorine and iron compounds are sometimes useful as an aid to digestion, by increasing the amount of chlorine secreted by the stomach and improving the quality of the digestive products. This fact explains the occasionally good results which follow the use of iron compounds in anaemia. Nevertheless, various inconveniences frequently arise from a long-continued use of these iron compounds, from their interference with the normal activity of the bowels, and especially the overwork which they impose upon the liver. Professor O. Schmiedeberg, of Strassburg, has recently contributed an article to the *Centralblatt für Klinische Medicin*, in which he calls attention to a new iron compound to which the term "Ferratin" has been applied. We quote a few paragraphs:—

"The iron required in the formation of blood is, under ordinary conditions, supplied to the organism with the food in which it exists in the form of a peculiar compound, differing from the ordinary iron albuminates, and in which the iron is united with an albuminous substance in a manner similar to organic compounds. Bunge first prepared a compound of this character, containing 0.29 per cent of iron, from the yolk of hen eggs. This compound he named haematojen. The latter, however, is only a modification, poor in iron, of the actual compound, rich in iron, which exists in the animal body."

"Ferratin, with respect to its physiological properties, cannot be replaced by other iron compounds, inasmuch as these are either useless as reserve nutritive substances, as in the case of ferro and ferricyanides and the related haemoglobin and its derivatives, or act injuriously by their corrosive action on the stomach and intestinal tube in almost every instance, and are therefore incompatible, as

in the case of the ordinary salts of iron, even when taken and assimilated in very small quantities."

"Ferratin is introduced into trade as a fine powder, having a reddish-brown color resembling oxide of iron, and in two forms; viz., in the free state insoluble in water, and as a sodium compound, which, after being allowed to stand for some time, and then stirred, is readily dissolved in water. The water for this purpose must be as free as possible from lime, as otherwise the insoluble calcium-ferratin is liable to be formed."

Ferratin is offered in this country by C. F. Boehringer and Soehne, 15 Cedar St., New York.

At the last meeting of the State Board of Health held at Lansing, Mich., April 15, the following resolutions were passed relating to restriction of tuberculosis, a work in which the State Board of Health has taken the lead:—

"Resolved, That we recognize the following facts:—

"1. That tuberculosis is the most grave and fatal disease now affecting the health and lives of the people of this State, destroying about 3000 lives per year.

"2. That this disease originates principally by transmission from man to man, or from man to animals and again to man.

"3. That the spread of this disease can be best arrested by the disinfection of the sputa and other discharges, by special supervision of those infected, and by the care of such persons under conditions which will prevent the transmission of the disease to others.

"4. That such disinfection and supervision cannot be carried out in the crowded homes of the poorer classes; and—

"5. That under conditions which will prevent re-infection, many consumptives may be permanently cured, and returned to their homes and work, educated in the methods of restricting the disease. In view of these facts,—

"Resolved, That this Board request of the next Legislature an appropriation of \$.... for the purpose of building, equipping, and maintaining a State Hospital for Consumptives."

"ARSENAURO" BROMIDE OF GOLD AND ARSENIC SOLE AUTHORIZED FORMULA OF DR. W.F. BARCLAY-

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The improved form of kumyss which we offer is **made from sterilized milk**, and by processes which render it absolutely **uniform in quality**. The method of manufacture is such that its constituents are definite and constant. It is **much more palatable than ordinary kumyss**, in consequence of the absence of foreign microbes, and is particularly suited to cases in which milk in its ordinary form disagrees with the patient, and in which so-called "biliousness" is a troublesome symptom. Cases of hypopepsia are rapidly benefited by it. It is also of great service in the treatment of gastric neurasthenia, or nervous dyspepsia.

It is extensively used in some of the largest medical institutions in the country, and has received the highest commendation from those who have investigated its merits. This kumyss is put up in pint and quart bottles, and will be shipped to any address at the following price:—

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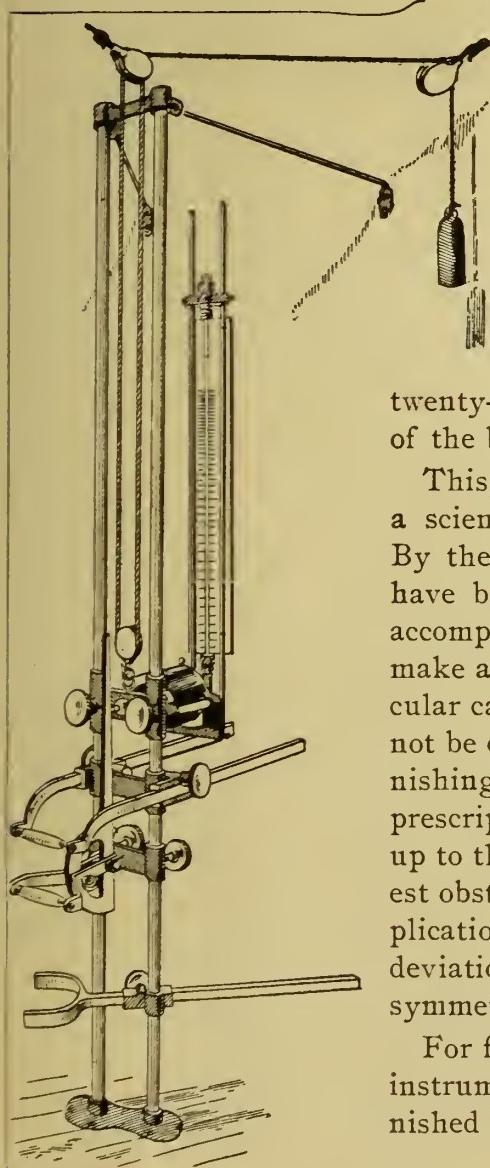
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 HIGHEST AWARD WORLD'S FAIR, OCT. 4TH, 1893.



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- 2nd. Raising and lowering without revolving the upper part of the chair.—Fig. VII.
- 3rd. Obtaining height of $39\frac{1}{2}$ inches.—Fig. VII.
- 4th. As strong in the highest, as when in the lowest position.—Fig. VII.
- 5th. Raised, lowered, tilted or rotated without disturbing patient.
- 6th. Heavy steel springs to balance the chair.
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Fig. XVII—Dorsal Position.

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1873.—Twenty-Second Year.—1894.

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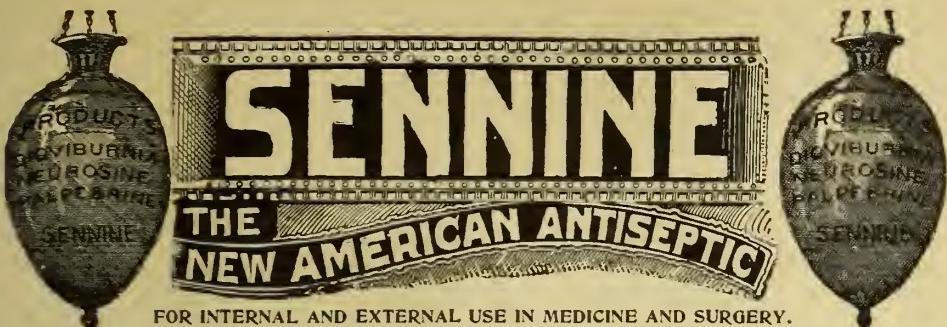
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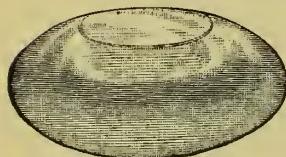
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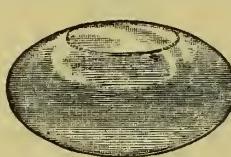
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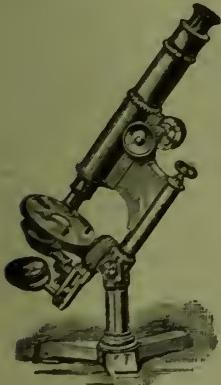
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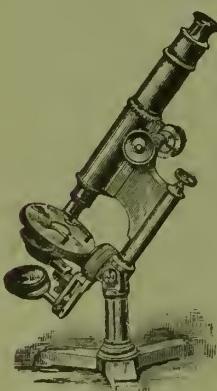
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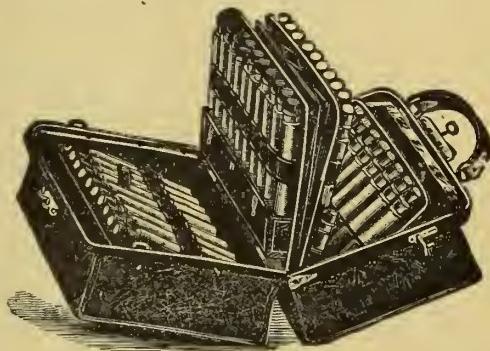
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Professor of Physiology, University of Durham; Physician to the Royal Infirmary, Newcastle-upon-Tyne;
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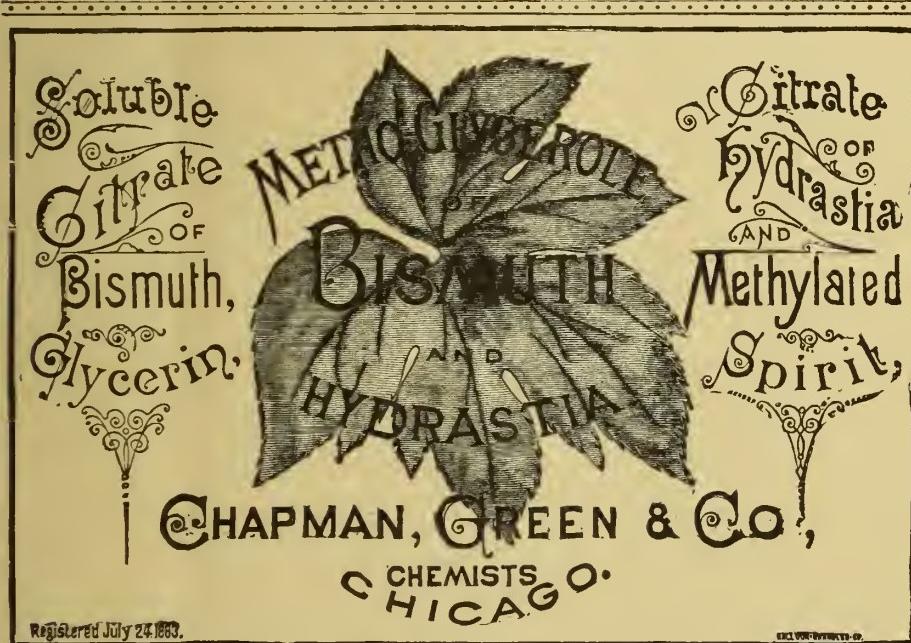
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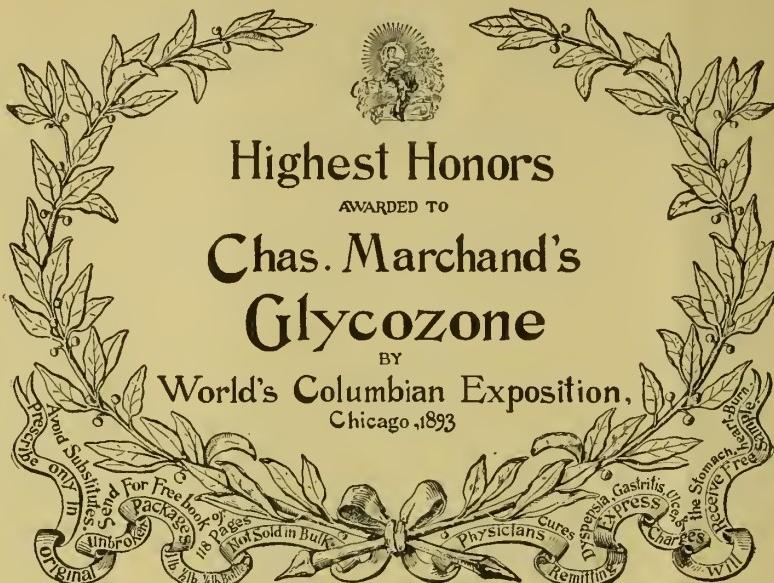
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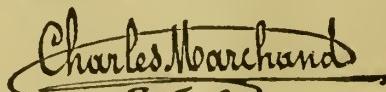
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LOCATION OF FISSURE OF ROLANDO, AS DETERMINED BY
CHIENE'S METHOD.

(See "A Case of Trephining for Epilepsy,"
Page 103.)



SIDE VIEW OF SECTION OF BONE REMOVED.

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MODERN MEDICINE

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BACTERIOLOGICAL REVIEW.

VOL. III.

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NO. 5.

ORIGINAL ARTICLES.

A CASE OF TREPHINING FOR EPILEPSY.

BY J. H. KELLOGG, M. D.,

Battle Creek, Mich.

In the summer of 1888 the writer was consulted by a mother in relation to her son, a nervous boy of nine, whom she brought with her. An examination of the boy showed the case to be unmistakably one of Jacksonian epilepsy. The boy had had a fall, in which the head was somewhat injured, but the location of the injury and the extent of it, it was impossible to determine; no evidence of the injury remaining behind. Neither cicatrix nor indentation of the scalp could be found at any point.

The epileptic seizures occurred uniformly in the morning immediately after rising. The attack was preceded by a distinct aura, which consisted in a peculiar numb sensation felt in the left hand. It had been found that the attack could be prevented by placing the hand in cold water, or by firmly seizing some object in the hand. To make sure of preventing the attacks, the boy had availed himself of both expedients, and kept by his bedside a pail of water with a bit of wood in it ready for instant use the moment he sprang out of bed in the morning. If he escaped the first hour after rising without an attack, no further difficulty was experienced during the day.

The mother was informed of the nature of the disease, and the probability that no radical cure could be obtained by other means than by an operation, but declined the operation, preferring to try palliative measures for a time, in the hope

that the boy might, as she said, "outgrow the disease."

A year later, the writer had the pleasure of spending a little time with Prof. Horsley, in London, observing his methods of operation, and the result in his cases, and when again consulted in relation to this patient, suggested the possible advantage of an operation, but the parents still hesitating, the matter was deferred.

A few weeks ago the patient again came under observation. I found him, at this time, a tall, pale boy of fourteen, evidently suffering decidedly from hebétude and indigestion, the result of enormous doses of bromide of potash which he had been swallowing almost constantly for several years. In spite of the use of this and numerous other remedies, however, the attacks had increased in frequency and severity, and were no longer confined to the morning hour, as formerly. The Jacksonian character of the attacks was, however, as pronounced as ever, and another interesting feature presented itself: The patient had discovered that pressure upon a particular point upon the scalp caused pain. On making, at my request, a careful study of all the nervous and psychic symptoms in the case, my colleague, Dr. Riley, observed that pressure upon the painful point, which was located in the right parietal region, produced numbness in the hand. The exact location of this point is shown in the cut (see frontispiece), and also its relation to the fissure of Rolando, as determined by Chiene's method. Upon my urgent recommendation of an operation as the only procedure likely to give the boy even temporary relief from his distressing malady, the parents consented to an operation, for which the boy was accordingly prepared, the patient's scalp, as well as his face, being entirely covered by a pustular eruption resulting from the

free use of enormous doses of bromide of potash. The scalp was shaved, and a bichloride of mercury compress applied for a number of days prior to the date appointed for the operation.

The time for operation having arrived, the scalp was again shaved, with every antiseptic precaution, and the location of the fissure of Rolando determined by Chiene's method, as before stated. This method is so simple and convenient, and withal seems to be so little known in this country, that it may be worth while to describe it. It is as follows:—

A piece of paper is cut to an exact square, measuring eight inches on each side. Fold the paper once in such a manner as to form a right angle triangle, as shown in Fig. 1. Seizing the corner of the upper fold of the paper at C, carry

in the median line. Locate a point one half inch behind the center in the median line. Now, taking the paper prepared as described, place the angle B, Fig. 3, upon the point last located upon the skull, making the line BC correspond to the anterior portion of the median line. Holding the paper exactly in position, bring the line BD down to the side of the head, and mark its direction upon the shaved scalp by means of a sterilized aniline pencil, as shown in the cut (see frontispiece).

This can be done in as little time as it has taken to read this description. The form of the incision made, is shown upon the cut by the dotted line. The scalp and pericranium being turned down, a portion of bone including the painful point and the motor area for the hand, was removed

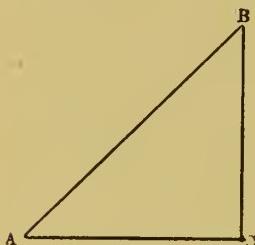


Fig. 1.

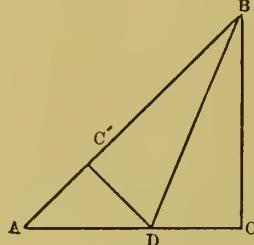


Fig. 2.

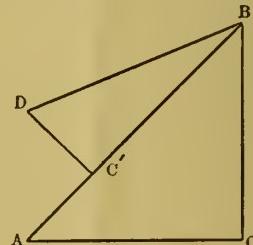


Fig. 3.

it over to the line BA, making it touch the line at such a point that the line BC', constituting the edge of the paper, will exactly coincide with the line AB. The appearance of the paper when thus folded is shown in Fig. 2. Fasten together the two thicknesses of paper constituting the last fold, with a pin or a little gum. It is apparent that the angle ABC is 45° , while the angle ABD or C'BD, is one half of 45° , or $22\frac{1}{2}^\circ$. Seizing the paper at the point D, open up the first fold, spread the paper out, when it will have the shape shown in Fig. 3. The angle DBC is equal to the sum of the two angles ABC and DBC' of Fig. 2, or $45^\circ + 22\frac{1}{2}^\circ = 67\frac{1}{2}^\circ$, practically the angle of the fissure of Rolando.

To locate the fissure, it is now only necessary to proceed as follows: Locate the glabella, the line passing across the lower portion of the forehead touching the eyebrows, and also the inion, or occipital protuberance. Connect these two along the median line of the skull by a piece of coarse silk, so as to get the exact measure of the distance. Find the middle point, and mark it upon the skull exactly

with the greatest ease and without the slightest injury to the dura, by means of a Divelbiss saw. The portion of the bone removed is shown the natural size (see frontispiece).

The skull was found remarkably thin, as will be observed. Careful examination of the bone gave no evidence of any previous injury, and a like careful inspection of the coverings of the brain revealed no evidence of disease. It was evident, however, that an extraordinary degree of intra-cranial tension existed, as the brain substance protruded into the opening in a very marked and unusual manner. The dura being incised and the flap turned over, the brain was very carefully inspected, the exploration being carried half an inch or more within the skull beyond the edge of the opening, but no evidence of disease was discovered other than that named.

Both the galvanic and faradic currents were used, and a strong contraction of the muscles was applied to the ball of the thumb, but no reaction was produced. The wound in the duramater was carefully closed by a fine catgut, and the

scalp sutured with silkworm gut. A troublesome bleeding from the diploe near the longitudinal sinus was controlled by means of a narrow strip of iodoform gauze which was brought out through a small incision in the flap. This was removed at the end of twenty-four hours. On the third day, there being a slight bagging in the dependent portion of the wound, the edges of the wound were carefully separated for a short distance, when one or two drams of bloody serum ran out. The healing was by immediate union, and the case progressed to recovery from the operation without an unfavorable symptom. Up to the present time, four weeks since the operation, the patient has not experienced a single indication of the disease for which the operation was performed; the only morbid symptom present, is a slight numbness in the left thumb, which has persisted since the operation, and at first involved the whole hand. This is gradually disappearing, however, and it is hoped that the patient's recovery may prove to be permanent.

In this case, the only cause for the disease seemed to be an abnormal degree of intra-cranial tension. The effect of pressure inducing numbness of the left hand, must have been due to the extreme thinness of the skull.

The patient's temperature after the operation, at no time exceeded 100.2° , which temperature was reached the day following the operation.

I was much pleased with the operation of the Divelbiss saw, which does its work neatly and rapidly, and gives one absolute control of the size and shape of the opening.

The improvement which has occurred in this case since the operation is something remarkable. Prior to the operation the mental apathy was so great it was sometimes difficult to attract the boy's attention. He would sit for long periods gazing vacantly at the floor or some other uninteresting object. In the short time which has elapsed since the operation, there has already been a complete change in his manner and behavior. The mental expression is that of intelligence and activity, and the movements are quick and sprightly, instead of slow and uncertain, as before the operation. I recently subjected him to a few physiological tests, the result of which may be interesting.

Test of Sensory Reflexes.—The object of the first of these tests was to determine the time required for the patient to give a signal after the impression was made upon the nerves of touch. The instrument used as a time marker is a Verdin chronometer. The signal instrument and the instrument for making the impressions are also those of Verdin, with some modifications of my own which add to their convenience and usefulness. Four tests were made, with results as follows:—

1. The signal instrument being held in the right hand of the patient, impressions were made upon the thumb and then the forefinger of the left hand. The reaction time was as follows: Average for thumb, .243 sec., average for forefinger, .166 sec.

2. The signal instrument being held in the left hand of the patient, impressions were made upon the right thumb and forefinger successively. The average reaction time for the thumb was .136 sec.; for the forefinger, .196 sec.

3. With the signal instrument held in the left hand, impressions were made upon the thumb and forefinger successively touched, with the following results with regard to reaction time: Thumb, .260 sec.; forefinger, .300 sec.

4. With the signal instrument held in the right hand, impressions were made upon the thumb and forefinger successively touched, with the following results with regard to reaction time: Thumb, .156 sec.; forefinger, .136 sec.

In making the above tests, the conditions were made as nearly uniform as possible. Comparing the above tests, it is noticeable that the reaction time required for the left thumb is much greater than that for the right thumb or either of the other digits tested; doubtless indicating some morbid condition of the cortical center for the thumb.

Test for Quickness of Vision.—By means of an apparatus which I have especially devised for the purpose of testing the quickness of vision, I tested the length of time required to perceive an object, first with both eyes, then with right and left eye separately. The instrument consists of a rotating disc with an aperture in its periphery, and so arranged that when the disc is rotated, the aperture passes by an object, usually a letter placed upon a proper support.

The objects used in this case were the letters "A" and "B" with a diameter of one cm., well illuminated and viewed at a distance of one meter. The device is so arranged that the length of time occupied by the aperture in passing the object is marked by the closure of the electrical circuit, which operates upon a solenoid placed in a circular electrical field, which is thus made to move, and acts upon the short arm of a long lever, the distal end of which rests against the smoked surface of a recording cylinder. This arrangement is a very delicate one, measuring time accurately to 1-1000 of a sec. The test is made by revolving the disc first at a speed so great that the patient is unable to see the object, then gradually decreasing the speed until he names the letter, or other object, correctly. The results of this test were as follows: Both eyes, .0211 sec.; right eye, .0146 sec.; left eye, .0211 sec.

It will be noticed that the time required for sight with the left eye was .007 of a sec. later than with the right eye, and that the time for the left eye was also the time for both eyes, and indicated that a slight impairment of function in the right portion of the brain extended to the visual center, or, at least, to some part of the visual apparatus.

Test for the Quickness of Muscular Movement. — This test was made by means of an instrument especially constructed by the writer for the purpose. The instrument consists of a frame about 60 cms. in length, the two ends of which are connected by a brass rod. Upon this slides a small metal carriage, which is connected with one pole of a battery, the other pole being separately connected with one end of the instrument, and with a stop so placed upon the brass rod as to give the carriage an opportunity to move through a distance of exactly 30 cms. This stop is held in place by elastic supports, so that it is not liable to be broken by the impact of the carriage, and is provided with a clutch which holds the carriage closely after connection has once been made.

The results obtained with this instrument were surprising, as they were exactly opposite from what had been expected. The average time required for moving the carriage through a distance of 30 cms. by the muscles of the left

forearm was only .160 sec., whereas the time required for the same movement by the muscles of the right forearm was .210 sec. This test was repeated a number of times, but the movements of the left arm were uniformly found to be quicker than those of the right arm. The only explanation which occurred to us for this interesting fact, was that the motor center controlling the muscles of the arm which are employed in this movement, lying, as it does, near to the diseased cortical area, the center of which seems to be a small area controlling the left thumb, is in a state of increased irritability or hyper-excitement, so that it responds more quickly to reflex stimuli than the corresponding area of the left side, which is presumably in the normal state.

In making these tests, a noticeable change occurs in the appearance of the depression which marks the site of the operation. When the test of the right hand was made, little or no movement was observable, but when the patient's attention was focused upon his left hand, during the test of the thumb and forefinger, a very marked bulging occurred, so that the bottom of the depression, which was very much below the level of the surrounding portion of the scalp, was raised to the normal surface, thus obliterating the depression. At the same time a very noticeable pulsation occurred, the movement of the scalp with the pulsation being so great as to be easily noticeable at a distance of twenty feet or more. This phenomenon is not mentioned as anything extraordinary, but only as an interesting ocular demonstration of one of the best known facts in cerebral physiology.

I shall watch this case with great interest, and shall repeat these and other psychological tests at intervals, so as to note as exactly as possible the functional changes in the cortex which may occur as the result of the operation. These studies are of special interest to me, since, so far as I am aware, no similar studies have been made in cases of this kind. As soon as other duties allow me time to do so, I shall give, in another paper, a precise description of the new devices for making the psychological tests which have been referred to in this paper.

THE VOLUNTARY MOTOR MECHANISM AND
SOME OF ITS DISEASES.—MOTOR
PARALYSIS, WITH ILLUSTRATIVE
CASES.

BY W. H. RILEY, M. D.,

Sanitarium, Battle Creek, Mich.,

Member of the American Neurological Association, etc.

(Continued from the February No.)

DISEASES AFFECTING THE UPPER SEGMENT
OF THE MOTOR PATH.

CASE 4.

Diagnosis.—Left hemiplegia.

The present trouble began about one year ago. The first symptom noticed was a feeling of heaviness and weakness in both legs. The patient soon noticed that she staggered in walking, and had difficulty in playing the piano. The movements of the left hand particularly were weak and awkward. The weakness in the left arm and leg increased for four or five weeks, at the end of which time it was at its worst. At this time she could barely walk a few steps by the aid of support, and was able to use the left arm but little. She continued in this condition without much if any change for the better up to the time of my examination, which was about five months from the beginning of her trouble.

A short time before the paralysis developed, she had a dull occipital headache, which has continued with her. About two weeks ago she began to have a deep-seated, dull, aching pain in the right temple and in the socket of the right eye. The pain is continuous and very severe in character. At the beginning of the trouble she saw objects double, but this does not trouble her at present.

The patient gives no history of any specific trouble, but a specific cause is suspected.

Examination.—Patient goes about in a wheel chair, can barely walk a few steps by the aid of her nurse. Her left arm is practically useless, but she is able to move it some. Knee-jerk in left leg is very much exaggerated; right knee-jerk, lively. There is ankle clonus in the left leg. Elbow-jerk and wrist-jerk are increased on the left side. Skin reflexes are increased, especially on the left side.

There is no anaesthesia. The patient has a peculiar thickness and heaviness of speech, and protrudes the tongue with difficulty. The left arm, hand, and fingers are carried in a flexed position.

Treatment.—The patient was placed under treatment consisting of the use of electricity, massage, hydrotherapy, and the internal use of iodide of potash. In two weeks from the time treatment was begun, the severe headaches were gone. After one month of treatment the patient was able to walk some without a cane. She was now placed on a graded course of exercise, and continued to gain in strength. At the end of three months she was walking without a cane or help, and was able to use the left hand nearly as well as ever. The treatment was changed from time to time, and exercise varied as the progress of the case seemed to indicate.

A strength test of all the muscles of the body was taken with the mercurial dynamometer at the beginning of treatment, and at intervals during the course of treatment. At the end of five months the muscles of the left arm had gained over 100 per cent in strength, and the muscles of the left leg had gained more than 50 per cent in strength. She was able to walk four miles daily out of doors, besides taking one or two hours' exercise daily in the gymnasium.

The patient had quite as good use of the left hand as ever. There was only a slight limp in walking, which could be detected only on close observation. She had regained her usefulness in every respect, and recovery was practically complete.

CASE 5.

The patient is a young man aged twenty-eight years. His trouble is supposed to have been caused by exposure and overwork. It began about nine months ago with numbness in the feet and legs, which soon extended up the lower limbs. Along with the numbness there developed a weakness in the legs, which gradually grew worse. At the time of my examination he could walk only a short distance with a cane, and scraped the ground with his toes when walking. He had a spastic gait, and walked as though his feet were glued to the floor. The deep and superficial reflexes were much exaggerated in both lower limbs, and ankle clonus was

present. The patient complained of subjective numbness in both legs, but there was no anæsthesia. There was retention of urine, the urine being drawn with a catheter. The bowels were constipated.

The patient was placed under treatment consisting of the use of the galvanic and faradic currents of electricity, massage, passive movements, exercise, and the use of hydropathic remedies. At the end of two and one half months the patient was able to walk two miles at a single trip without exhaustion. The strength of the muscles was measured by the mercurial dynamometer at the beginning of the treatment, and also when the patient quit treatment. A comparison of these tests showed a gain in strength of 417 pounds in the lower limbs alone. The patient also gained several pounds in weight. He was able to pass urine without the aid of the catheter. His bowels were regular, and his general health much improved. He went home well satisfied with the results of the treatment.

CASE 6.

Diagnosis. — Right hemiplegia involving the face, arm, and leg, with paralysis of all the external muscles of the left eye, caused by syphilitic gummatous meningitis at the base of the brain, particularly in the interpeduncular space, extending to and affecting the motor path and the third, fourth, and sixth cranial nerves.

The patient had primary syphilis six years ago. Six months later she suffered with a very severe headache, deep-seated, back of the eyeball, and in the temporal region on the left side. The headache was quite continuous, and lasted three or four months, when it disappeared. Soon after the disappearance of this severe headache, the patient became paralyzed on the right side of the body and in the external muscles of the left eye.

The paralysis developed gradually. The muscles of the left eye were not involved until some time after the paralysis affected the right side of the body. The loss of motor power in the parts involved was quite complete, so that the patient was practically helpless for one year. At the end of the year she began to make some little improvement, and had improved very slowly up to the time of my examination, which was four years after the beginning of the paralysis.

Examination. — The patient is able to walk short distances. She has a limping hemiplegic gait, and scrapes the ground with the toes of her right foot when walking. She is able to move the right hand and arm some, but cannot put the right hand to the top of her head. She carries her arm at her side, flexed at the elbow. The hand is flexed at the wrist, and the fingers are tightly closed in the palm of the hand. The knee-jerk is much exaggerated on the right side, and is very lively on the left. Ankle clonus is present in the right leg. The superficial reflexes in the lower limbs are increased, as are also the reflexes in the right arm. The paralysis is greatest in the arm, and is least noticeable in the right side of the face. When the patient smiles, the face is drawn to the left. The electrical irritability of nerve and muscle is normal. The patient complains of a soreness of the muscles. There is no anæsthesia of the skin. There is a paralysis of all the external muscles of the left eye. The pupil is dilated, and there is nearly complete ptosis of the upper lid. The vision in each eye is normal when corrected for slight myopia.

The patient was placed under treatment consisting of the use of the faradic and galvanic currents of electricity, massage, and hydrotherapy, and a graded course of exercise, to develop the weak muscles, together with the internal use of potassium iodide in doses varying from fifteen to thirty grains, three times daily. The faradic current was also applied to the left eye daily for the purpose of strengthening the paralyzed muscles. Changes were made with the above remedies from time to time, as the progress of the case seemed to indicate.

The patient improved in strength gradually. Her outdoor walks grew longer. She was soon able to use her knife in her right hand while eating at the table, and to carry her hand to the top of her head. Her fingers, which were tightly flexed in the hand at the beginning of treatment, began to relax, and she was soon able partially to extend her fingers by an effort of the will. After following this treatment for three months, she had doubled her strength in many of the paralyzed muscles, as was shown by a careful test of the muscular strength with the mercurial dynamometer. She continued the treatment, and

followed closely her prescribed exercise for three months longer, with gradual and constant improvement. The muscles of the eye improved with the improvement of the other paralyzed muscles.

After being under treatment six months, a test was taken again of the strength of the paralyzed muscles. The total gain of the muscles of the arm was over 200 per cent; that is, the strength was more than three times the strength of the first test. The gain in the muscles of the lower limb was nearly 100 per cent, or about twice the strength of the first test. The muscles of the eye were also improved. The eye was directed more nearly in its normal axis. The ptosis was much less noticeable and the pupil nearer its normal size. In order to appreciate properly what was accomplished in this case, one must keep in mind the real nature of the trouble. The symptoms certainly indicated that there were structural changes in the part of the nervous system affected, and this condition had continued for a period of four years with little improvement. A course of treatment as indicated above, persisted in for a few months, resulted in the great improvement here reported, which is certainly gratifying to physician as well as patient.

CASE 7.

The patient is a man forty-one years of age, a traveling salesman by occupation. He gives no history of rheumatism or syphilis.

For three or four years he has been troubled with various paresthesiae in the legs, especially below the knees. For the last two months these paresthesiae have increased in severity, and consist of sensations of numbness, burning, prickling, and coldness. With these sensory symptoms there developed a weakness in the legs which greatly interfered with locomotion. These symptoms are gradually increasing. During the two weeks before examination he had a band sensation about the waist.

Examination.—The above described symptoms are all now present. The patient can walk but a short distance without becoming very tired. He has a limping gait, and in walking, the toes of the left foot scrape on the floor. The knee-jerk is much increased in both legs, and the skin reflexes in the legs are also increased. The reflexes are increased,

mostly on the left side. The patient has some trouble in emptying the bladder. The expelling force of the bladder is diminished.

The diagnosis made in this case was a congestion and a mild inflammatory process affecting the pyramidal tracts of the spinal cord, a process which, if not checked, would finally have resulted in a destruction of the nerve fibers with an attending sclerosis of these parts of the spinal cord. In other words, the case was in the early stage of what is usually described as *primary lateral sclerosis* of the spinal cord. There are reasons, however, that this term should be dropped. As a matter of fact, a sclerosis in the nervous system is never a primary process, but is always preceded by an inflammation or a degeneration, the inflammatory process being concerned primarily with the blood vessels, connective tissue, and lymphatics; the degeneration, with the nerve fiber or nerve cell. A sclerosis in the nervous system is always a secondary process following an inflammation or a degeneration. Then again we must keep in mind the fact that in typical cases of this kind, with the disease well developed, no autopsy has yet demonstrated a sclerosis limited to the pyramidal tracts.

This case was placed under treatment consisting of the alternate application of heat and cold to the spine for half an hour daily; a galvanic current of twenty-five milliamperes' strength was passed directly through the spinal cord by attaching the negative pole to a large abdominal electrode, and applying the positive along the spine for fifteen minutes daily. Massage was used three times weekly; and the faradic current was applied over the body generally on alternate days, to produce muscular contraction and improve the tone of the muscles. Exercise was prohibited for a time.

The patient began to improve at once, and rapidly gained in strength. He continued the treatment for some weeks. When dismissed from treatment, he was able to walk well. He had recovered his usual strength and vigor, and the unpleasant symptoms had entirely disappeared.

The writer is of the opinion that had this case gone on without proper treatment, it would have developed into a well-marked case of spastic paraplegia, from which a complete recovery would have been impossible. This case illustrates

the importance of making a correct diagnosis and appreciating the gravity of the disease, and shows how necessary it is that the patient be willing to submit to treatment in the early stage of the disease.

One year after dismissal from treatment, this patient reported that he was enjoying the best of health, and had been actively engaged in business, with no return of the symptoms of his old trouble.

(To be continued.)

INHALATION AND EXHALATION

AS PRACTICED WITH THE PERFECTED INSTRUMENT OF DR. C. DENISON.

BY ALFRED SEEBASS, PH. G., M. D.,
Denver, Colo.

INHALATION is the method of applying remedies to the respiratory tract whereby the medicament is brought into contact with the mucous membrane of the nose, mouth, pharynx, larynx, and bronchi,

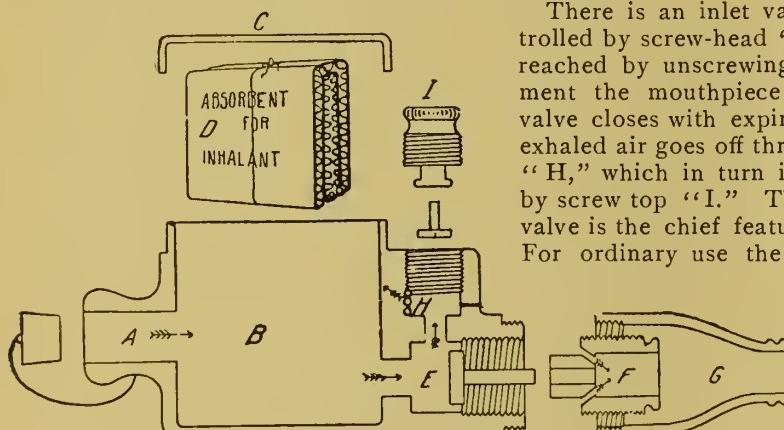


Fig. 1.

and deposited possibly in the alveoli of the lungs themselves. After numerous experiments with different inhalers and with steam and air-spray producers, I have come to the conclusion that inhalation as ordinarily practiced, is of but very little therapeutic use, since about four fifths of the more important antisepsics (as menthol, thymol, creasote, carbolic acid, etc.) are recoverable after completion of the inhalation. The moister, and so heavier, outgoing air carries with it these volatilized substances. This is the objectionable feature with in-

halers generally, since so little of the medicated vapors reach the alveoli, especially in the diseased or more affected lung.

This difficulty is entirely overcome or reduced to a minimum by a neat little instrument designed by Dr. Charles Denison (see note, p. 111), in which we have both an inhaler and an exhaler. The mechanism of this instrument is shown in Fig. 1.

The air enters through the nozzle "A," which is purposely made for the possible attachment of a rubber tube connected with an oxygen tank, any desired vaporizer or gas generator. In the box "B," covered by the cap "C," is the absorbent "D," a coil of corrugated blotting paper wound by wire to be a little smaller than the inner caliber of the box, or some loose absorbent wool or light muslin gauze may be substituted. This serves to hold and gradually disseminate the various combinations of germicidal and healing oils, or other evaporating substances, which are intended to be used in this process.

There is an inlet valve at "E," controlled by screw-head "F," which can be reached by unscrewing from the instrument the mouthpiece "G." This inlet valve closes with expiration, so that the exhaled air goes off through the exit valve "H," which in turn is made adjustable by screw top "I." This adjustable exit valve is the chief feature of this device. For ordinary use the inlet valve "E"

needs to be from 5-10 to 9-10 open, while the exit valve "H" should be only from 1-10 to 5-10 open; but there are a

number of combinations which will be found to suit individual cases and diseased conditions. The tension of the air is increased at will, from an easy to a more difficult use of the instrument, according to the need and ability of the patient.

The smaller cut (Fig. 2, next page) shows the actual size of the instrument as made wholly of hard rubber. The reader will at once agree with me as to its superior nature, its compactness, and its desirability, as shown by the following:—

1. It combines both an inhaler and an

exhaler, and can easily be carried in the vest pocket.

2. The *forcible exhalation* is the main point, since the air pressure in the lungs can be so much increased at the will of the user.

3. The greatly increased haematosis by a judicious, persistent use of this instrument, will be apparent at once to the careful observer; the oxygen in the inhaled air is crowded into the blood, so to speak.

4. By increasing the intra-thoracic pressure, we force the contained air into the remotest parts of the terminal bronchi, and into the possibly partially closed alveoli, and help expectoration, and by so doing cleanse the lungs of a large amount of catarrhal secretion. This increases lung capacity in various affections of the bronchial tubes in the first (catarrhal) stage of consumption, and even in advanced tuberculosis proves to be grateful and beneficial.

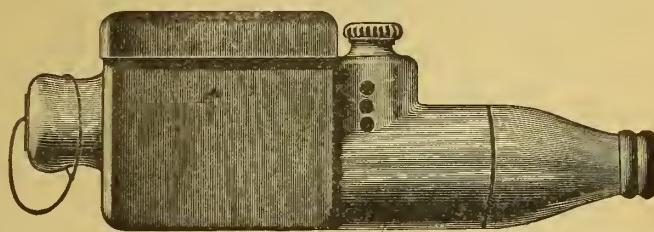
5. By its persistent use we secure some of the effects which are supposed to be due to a high altitude, while the user remains in a low altitude.

6. In most inhalers on the market at the present time, the inhalation is not as free as in this instrument, since in them one has to draw the air through a sponge, cotton, or other like substance,—a very objectionable point, since the weak air cells have to stand the suction or lessened pressure produced. We need to get as much air into the lungs with each inhalation as possible, and then drive the air into the lung periphery and air cells by the forcible expiration produced by nearly closing the exit valve. A good way to prove this increased air pressure is shown by making use of a manometer. First use during exhalation a partially closed exit valve in the inhaler, and then blow with the same force in the manometer. This will show you that you are having a resistance equal to 20 to 80 millimeters of mercury in your lungs according to the strength used in the act.

7. In addition to the *exhalation*, any preferred combination of antiseptics is now used in *inhalation*. Thus we have a most desirable instrument for lung gymnastics as well as for the application of healing and cleansing antiseptic vapors

to diseased areas within reach. The inhalent which goes with the instrument, composed chiefly of menthol, pinol, phenol, etc., is both agreeable and effective for use in chronic lung affections, but every physician can vary the combination of vaporizable oils and salts to be used as indicated and according to his individual judgment.

8. In practice, the correct and persistent use of this little instrument (the



DENVER SURGICAL INST. CO.

Fig. 2.

valves of which are supposed to be gauged to suit each invalid) is verifying all the above-mentioned expectations.

NOTE : A reprint of the article describing this "Air-Pressure Inhaler and Exhaler" will be sent on application to the makers,—The Denver Surgical Instrument Co., 1405 Stout St., Denver, Colo.

Malarial Infection.—The remarkable discovery of Laveran, by which we have learned that true malarial disease is the result of the infection of the blood by parasites, has given a new interest to every fact which pertains to the causation of this malady. Especially interesting is the following statement by surgeon Parke, Stanley's companion in his African exploration, which was published in the *Lancet* (May 28, 1893) :

"Perhaps the sharpest attack experienced during this part of the journey was my own, which followed a ducking received in crossing a tributary of the Congo. My donkey slipped accidentally and completely submerged me. This was but the first of a long series of experiences in which I found that every wetting in Equatorial Africa meant a subsequent attack of intermittent fever. Another lesson soon learnt, and for which I was still less prepared, was the fact that our donkeys after each corresponding drenching developed febrile symptoms exactly corresponding to those of their fellow-travelers."

TRANSLATIONS AND ABSTRACTS

[THE articles in this department are prepared expressly for this journal.]

POISONS OF THE URINE.

BY PROF. A. CHARRIN, M. D.,

Physician to the Hospitals of Paris, Member of the Society of Biology, and Director of the Laboratory of General Pathology.

Translated by J. H. Kellogg, M. D.

URINARY INTOXICATION.

(Continued from February No.)

The Lesions and Symptoms induced by the Introduction of Urine into the Circulation of the Rabbit.—It is necessary to employ a filtered liquid neutralized at ordinary temperature—that is, at a temperature of 16° to 23° C. The urine should be introduced into the general circulation at the rate of one cubic centimeter per second, on the average.

The first important symptom is contraction of the pupil. The contraction is slow, symmetrical, progressive, and may reach such a degree that the point of the sharpest needle would not be able to enter the orifice. We see here the same condition which is encountered in locomotor ataxia. This myosis begins at about ten to twenty cubic centimeters, then a given limit being attained, the stenosis does not increase further. It is generally in direct line with the toxic value of the liquid used in the experiment. The thoracic movements become less and less ample. The muscular spasms agitate the entire body. These are without significance, being reflex movements arising from the impression made upon the endothelial lining of the veins by the difference in temperature between the secretion introduced and the blood. Respiration becomes more restricted, less frequent, without retaining its regularity.

The symptoms relating to the heart are acceleration, erythema, failure, vertigo, syncope, and oedema, either visceral or peripheral. The most striking symptoms are, on the one hand, increase of urinary secretion, and on the other hand, lowering of temperature.

Distilled water introduced into the blood vessels of a rabbit, in equal doses,

or in doses slightly superior to those of urine, does not produce similar results.

Urinary Intoxication in Man.—In man the symptoms of urinary intoxication are polymorphic. There are symptoms which are wrongly attributed to auto-intoxication, such as albuminuria, oedema, vascular and cardiac disorders, certain inflammations, especially those affecting the serous membranes, the disorders which may appear when the urine is practically normal in quantity and quality.

When the kidney has lost in a large measure its permeability, other phenomena occur. Clinical observation depicts these phenomena under various aspects, which are attributable to special poison. They vary according to the mode of evolution of the disease, which may be super-acute, acute, sub-acute, or chronic, according as the glomerular filter is alone affected, or as the liver, the lungs, the digestive tube, the skin, the circulatory apparatus, the dyscrasiae, etc., add their complications. Very frequently regular dyspnoea is observed. It is due to a bronchitis more or less extensive, sometimes immobile and superficial, sometimes localized and involving the parenchyma. It is due to oedema, congestion, hemorrhages, pulmonary infarctus, broncho-pneumonia, pneumonia, etc. It may also be due to hydrothorax and to pleurisy, rarely pulmonary gangrene, still more rarely to infiltrations of the glottis and paralysis of the vocal cords, less rarely to bulbar poisoning localized upon the nuclei which control respiration and circulation. It may be due to modifications in the rate of circulation and in vascular tension, and also, according to the experiments of d'Ortille, to the diminution of the respiratory capacity of the blood.

Poisoning by renal insufficiency reveals itself sometimes by hemorrhages which may occur in cases of quick poisoning or in those of a slower type.

The alterations of the blood, and dyscrasiae of the blood-vessels, of the serum, of the plasma, take part in the production of the symptoms of the first group.

The cardiac and vascular changes, and the notable increase of blood pressure which accompanies them, explain in part the symptoms of the second category.

Vomiting and diarrhoea announce that effete matters, the physiological mode of exit being barred, are directed toward the digestive tube. It is gastro-intestinal

uræmia. The digestive tube thus plays the role of an eliminative organ.

Sometimes in addition to œdema, the skin is the seat of erythemas and of various forms of dermatitis. These symptoms are equally observed in other forms of poisoning, as in those which result from the toxic properties of microbes, or from poisons received from the exterior, such as mercury, the balsams, etc. We may also add that pleurisy, pericarditis, arthritis, and other serous inflammations may appear. The most prominent symptoms are those of a nervous character, as cephalalgia, disorders of hearing and of vision, torpor, coma, delirium, convulsions, sensory disturbances, digital gangrene, anæsthesia, abnormal sensitiveness to cold, paralysis, abnormal psychic states, sometimes advancing to mania brightique.

In the course of uræmic poisoning, the temperature is habitually low. Sometimes it is elevated. These same oscillations are observed, as I have demonstrated, under the influence of certain poisons.

In man the pupil presents various appearances. Myosis has been seen by Roberts and Bouchard in certain phases.

There is a manifest resemblance between the poisonous phenomena produced by secretions or excretions and those of bacteria. When we inject into the circulation the soluble products of bacteria, we note acceleration of respiration, enteritis, extravasations of blood, elevation of temperature, convulsions, coma, etc. From this it is evident that our organs manufacture substances which, by some of their properties, are closely related to those which are produced by infectious parasitic cells. There is some difference, certainly; there is not complete agreement. In the two cases we may see the evolution of lesions continue after the cause has ceased to act.

(To be continued.)

Mortality from Cancer.—Prof. Pio Foa, of Turin, read at the late International Medical Congress at Rome, a paper in which he asserted that deaths from cancer reach in some countries 15 per cent of the total mortality, which amounts to a veritable epidemic. The question of the possible parasitic origin of this disease occupied the attention of the section of the Congress devoted to general pathology and pathological anatomy.

THE PREVENTION OF TUBERCULOSIS.

No question can be of more interest to the medical profession at this time than the discussion of the prevention of tuberculosis. That such a question is of intense interest is manifest when we remember that at least one half of the whole human race is affected with tuberculosis either in slight or severe form, and that it causes the death of at least one seventh of all who pass away, killing about one third of those who perish between the ages of fifteen and forty-five. And yet this is a disease which may be largely prevented. We cannot remain indifferent to the question, and we should no longer be inactive.

It has been believed for some time that tuberculosis was a communicable disease, but not until within a few years have we had positive testimony that such was the fact. In a most interesting article in the March number of *Harper's*, Dr. T. Mitchel Prudden discusses this subject at considerable length. It is from this article that we obtain the facts here given. Dr. Prudden says that it is impossible for tuberculosis to develop in the body unless transmitted from the sick to the well.

The tubercle bacillus cannot move about, nor can it grow without moisture, nor at a temperature much above or much below that of the human body. The material on which it feeds must be very nicely adapted to its requirements, and it has no lurking or growing places in nature outside of the bodies of men and a few warm-blooded animals. It can be cultivated artificially in the laboratory, and we know more about its life and peculiarities than about almost any other germ. While it can remain alive in a dried state for many weeks, yet it is readily killed by heat, by sunlight, and by many of those chemical substances which we call disinfectants. It does not flourish equally well in the bodies of all human beings.

When once it gains lodgment in a body suited to its growth, it multiplies slowly, each germ dividing and subdividing, taking from the tissues material for its growth, and returning to them certain subtle poisons which it sets free. The action of the tubercle bacillus is peculiar in that it stimulates the cells of the body wherever it may lodge

until there is a formation of little masses of new tissue which we call tubercles. These tubercles are, as a rule, short-lived, and if the disease progresses, tend to disintegrate. If the tubercles have grown in such situations as make this possible, as in the intestinal canal or the lungs, the disintegrated and broken-down material often containing myriads of the living germs, may be cast off from the body. In tuberculosis of the lungs, or consumption, this waste material is thrown off with the sputum. While almost any part of the body may be affected, tuberculosis of the lungs is by far the most common form of the disease.

From this it will be seen that the only way in which man can acquire tuberculosis is by getting the tubercle bacillus into the body from tubercular men or animals. The only animals which are likely to have the disease are tubercular cattle, and these convey it through the meat or milk. But the great danger of infection, of course, comes from another source.

Almost as soon as the significance of the tubercle bacillus was established, a series of studies was undertaken on the possibility of the spread of the disease by the breath or exhalations of the persons of consumptives. These studies at once showed that the tubercle bacillus cannot be given off into the air of the breath from the moist surfaces of the mouth and air passages, nor from any material which may come from them while it remains moist, nor from healthy unsoiled surfaces of the body. The establishment of this fact is of far-reaching consequence, because it shows that neither the person nor the breath of the consumptive is a direct source of danger, even to his most constant and intimate attendants.

Dr. Prudden shows clearly how the consumptive, if not intelligently careful, may year after year be a source of active and serious and continual infection to his fellow-men. If only the uncared-for sputum from pulmonary tuberculosis be rendered harmless or destroyed before it dries, the ravages of this disease would largely cease. In other words, consumption can be largely prevented by the universal and persistent practice of intelligent cleanliness.

Dr. Prudden also discusses the ques-

tion of heredity, and shows that the disease is not hereditary, although it is true certain individuals are more likely than others to yield to the incursions of the tubercle bacillus. This vulnerability in the presence of invading germs is called susceptibility, and susceptibility to the action of the tubercle bacillus is hereditary. Tuberculosis, therefore, is not hereditary, but an aptitude to contract it under favorable conditions may be transmitted from one generation to another.

The author also discusses the question, Why do we not all acquire tuberculosis? and why was the world not long since depopulated by the ravages of that disease?

In speaking of the methods employed for the prevention of this disease, the author says: —

“The resolute avoidance by consumptives of the not only filthy but dangerous practice of spitting upon floors or streets, or anywhere else except into proper receptacles; the use of receptacles which may be and are frequently and thoroughly cleaned, and, best of all, of water-proof paper cups which with their contents may be burned; or, when circumstances require, the receiving of the dangerous material on cloths or Japanese paper napkins, which may be destroyed by fire, and not on more valuable handkerchiefs on which the sputum is allowed to dry while in use or before disinfection and washing; scrupulous care by others of the sputum of those too ill to care for it themselves, — these are the comparatively simple means from which we may most confidently expect relief.

“But these measures are not only of importance to the persons who are as yet free from the disease, but they are also of vital significance to the consumptive himself. His chances of recovery will certainly be much greater if he be free from the material which would otherwise serve as a constant source of infection. Probably the most serious source of infection which one is liable to encounter is the occupancy at hotels of bedrooms vacated by consumptives without subsequent efficient disinfection and cleansing, and the traveling in sleeping cars.”

In the light of our present knowledge, the author says that the outlook for those in the earlier stages of this disease is in

a considerable proportion of cases extremely encouraging. It is no longer the hopeless malady which it was earlier believed to be. It is not a losing fight to the one who early becomes aware that the disease is fastened upon him. He may still have a long and happy and useful life, if he will early and intelligently, faithfully and patiently, carry out certain instructions.

Some interesting statistics are given in the report made by the Munich Pathological Institute. Autopsies were made upon 500 children. Of all the autopsies held upon children between the second and fourth years of age, 41.3 per cent revealed tuberculosis in some form. Of all cases under the fifth year, 50.7 per cent had tuberculosis, while from the eleventh to the fifteenth year, over 23 per cent had that disease. Under one year of age the disease was not frequent, it being found in but three instances. Of the various organs and tissues affected, the disease was found in the lungs in 92.7 per cent.

As additional proof of the contagiousness of tuberculosis, the *Archives of Pediatrics* relates the instance of four infants who died from tuberculosis of the intestine. A careful investigation showed that it was the custom of the nurse to test the heat of the infant's food by placing the spoon between her lips before giving it to the child, and it was further learned that this nurse had tuberculosis. The writer says that by this means the bacilli were transferred from the mouth of the nurse to the alimentary tract of the child.—*Food.*

SURGICAL CLEANLINESS.

[THE following description of methods for the disinfection of hands, towels, and sponges in connection with surgical operations, we quote from "A Report of Aseptic and Septic Surgical Cases, with Special Reference to the Disinfection of Skin, Sponges, and Towels," by C. B. Lockwood, F. R. C. S., Assistant Surgeon to St. Bartholomew's Hospital.—ED.]

Disinfection of the Hands.—A few experiments have been made to ascertain how far the skin of the hands can be disinfected. These have been conducted upon similar lines. After the cleansing

and disinfecting, a bit of skin was removed with scissors and forceps, as in Reverdin's method of skin grafting, and dropped into broth. The mode of preparation was as follows: The nails were cut as close as possible, and the hands thoroughly scrubbed with hot water and soap. The nailbrush used for this purpose ought to have been sterilized by steaming for at least half an hour. This was seldom done, but soaking in carbolic lotion (1 in 20) for many hours was tried instead, but is probably quite ineffectual. Next the hands were rinsed with hot water and soaked in ordinary sublimate lotion (1 in 500) for a minute or a minute and a half. This method gave aseptic results on two occasions. When a watery solution of biniodide of mercury (1 in 1000) was used instead of sublimate, the result was different, and staphylococcus pyogenes albus grew in the broth. The nails were rather long when this test was applied to the skin, so a scrap was cut off and dropped into broth; cocci in twos and short chains were the result.

Of late a solution of sublimate in rectified spirit has been used for disinfecting the skin of the hands, and seems to promise the most reliable results. The nails have been removed as usual, the skin thoroughly scrubbed with soap and hot water and a nailbrush, and the hands soaked for a minute in a 1 in 1000 solution of sublimate in rectified spirit. In three experiments the skin was aseptic after this treatment, and in one it grew staphylococcus albus. Twice the assistant left his nails long enough to supply a scrap to put into broth; once this grew a rather large lemon-yellow coccus, which grew on the surface, and in the depths of gelatine, and slowly liquefied it, and once it grew an ordinary white mold. I am inclined to think that the spirit and sublimate method is the simplest and most reliable for the hands. Those who are interested will find various other methods in Sternberg's excellent "Manual of Bacteriology" (New York, 1892). The nails are clearly harder to disinfect than the skin. I do not believe it is possible to disinfect them except by cutting them as short as possible. In my previous report, an attempt at their disinfection was mentioned, which resulted in the subsequent growth of a streptococcus, probably streptococcus pyogenes.

Although these experiments upon the

disinfection of the skin of the patient and upon the skin of the hands are few and incomplete, yet they seem to favor the assumption that glycerine or alcohol are better than water for the dilution of the chemicals. They also exemplify the extreme difficulty of the problem, and the rashness of those who talk about disinfection without having applied appropriate tests.

Disinfection of Towels.—I have always felt distrustful of the towels which are now generally used to surround the field of operation. They are usually handed to the surgeon after having been dipped for a longer or shorter period in carbolic lotion. Nurses or sisters seldom use sublimate for this purpose, because it causes so much discoloration. Sixteen towels were examined in the usual way by cutting a scrap off and dropping it into broth. The results of attempts to disinfect with carbolic acid were as follows: Out of four which had been soaked for two hours in 1 in 20 carbolic lotion, one was aseptic; the other three infected the broth with *staphylococcus pyogenes albus*, with cocci singly and in pairs and in strings of seven or less, and with a white mold.

Another towel, which had been kept in carbolic lotion 1 in 25 for twenty hours, grew a bacillus with a strong sebaceous odor, and it might be expected that towels would contain bacteria derived from the skin. A towel which had been kept in 1 in 20 carbolic lotion for twenty-four hours was aseptic. For reasons already given, mercurial preparations were seldom used for the disinfection of towels, but one which had been in 1 in 2000 sublimate solution for some time, contained bacillus *subtilis*; while another which had been immersed for three hours in a solution of the same strength, was sterile. A towel which had been prepared by soaking for some hours in a weak solution of biniodide of mercury, 1 in 4000, was also sterile. As it was clear that carbolic acid and other chemicals could not be relied upon to disinfect towels, we began to steam them for half an hour in an ordinary steam sterilizer, and at the operation in another steam sterilizer. The first attempt was a failure. Although the towel had been steamed for half an hour and soaked in 1 in 20 carbolic lotion for more than half an hour, it grew staphylococci, cocci in

chains of six, and a spore-bearing bacillus such as I have often seen in cultures inoculated with skin scrapings. I attributed this failure to the circumstance that the towel had been placed in the sterilizer tightly folded up. In five other trials we had taken the precaution to open out the towels, and the result was aseptic in every instance. It seems as if this mode of preparation can be relied upon, the towel, of course, being soaked in an antiseptic after leaving the sterilizer and while in use.

Disinfection of Sponges.—The sponges used at operations have been tested twelve times by thoroughly squeezing out as much lotion as possible, cutting a piece off and dropping it into broth. Obviously, a certain amount of chemical must have been introduced each time into the broth, but the experiments mentioned in the beginning of this report show that it could have had no effect upon the ultimate result. The sponges were prepared and used as follows: The plan is most like that which Mr. Thornton * recommends in his article upon ovariotomy. If new, the sponges were well shaken to get rid of all sand, and left in a solution of hydrochloric acid (3j to Oj) for twenty-four hours, to remove the bits of coral and shell. Next they are thoroughly washed and squeezed out in warm water, temperature 100° F., which has been boiled and left to cool in a covered vessel to insure its sterility; from this they are transferred for half an hour to a warm solution of ordinary washing soda (3j to Oj water) for the removal of any fat or albumen. Sponges full of blood, fat, and albumen may require several repetitions of this part of the process. The soda solution is removed by again rinsing in warm sterilized water, temperature 100° F., and the sponges immersed in a cold solution of sulphurous acid (1 in 5) for twelve hours for a final bleaching and sterilization. During this stage a plate is placed over the sponges to sink them in the solution, otherwise they are apt to become discolored. Lastly they are squeezed as dry as possible, and placed in a carbolic lotion (1 in 20) ready for the operation, at which they are handed to the surgeon or his assistant in a bowl of lotion.

As carbolic acid evaporates, it is most important to have well-stoppered jars and

* Heath's "Dictionary of Practical Surgery," Vol. II, p. 153.

to change the lotion not less than once in a fortnight. The result of the twelve tests of this method showed that in every instance but one the sponges were aseptic. This does great credit to Nurse Duffus, who carried out the process. The failure occurred while she was away, and when an inexperienced nurse did the preparation. In this instance, the broth grew a micrococcus which had all the characters of *staphylococcus pyogenes albus*. Generally speaking, these experiments show that asepsis is with the greatest difficulty obtained with chemicals, but once obtained with either heat or chemicals, dilute solutions of chemicals suffice for its continuance.

TUBERCULOSIS IN FRANCE.

DR. LAGNEAU recently reported at a meeting of the Academy of Medicine, in Paris, the results of researches which he had recently made in relation to the mortality of tuberculosis considered from the standpoint of occupation and place of residence. He found the disease to be most prevalent among the laboring classes when exposed to dust. Marble-workers, stonemasons, makers of edgetools, needles, and files, locksmiths, masons, clothiers, and bakers furnish a large percentage of deaths from this disease. In Switzerland, stonemasons are found to lose by phthisis one out of every hundred. In England in every hundred deaths, thirty-four per cent are found to be due to phthisis in clothiers, that is, more than one third of the whole number.

Tuberculosis is also very common among persons who are sedentary in their occupation, especially those whose work requires them to sit in a stooping position, such as teachers, amanuenses, printers, clerks, lithographers, students, watchmakers, engravers, tailors, shoemakers, etc. In one thousand deaths of all kinds in Italy, nearly 500 were found to be students and teachers, and the cause of death, tuberculosis. The disease was found to be extremely fatal among printers. On the other hand, tuberculosis was found with comparative infrequency among persons who live in the open air, farmers, fishermen, sailors, foresters, etc. In Switzerland, only one or two in one thousand persons, agricult-

urists, die from phthisis; while in Italy, out of a thousand deaths of all kinds, only forty-four were found to be due to consumption in shepherds, and fifty-five in farmers. In France, the statistics of 662 cities show that the closer people are packed together in cities the more frequent is this disease. This fact is clearly presented in the following table, which shows the number of persons who annually die from tubercular phthisis to every one thousand inhabitants in cities of different population:—

95 cities with less than	5 000 inhabitants	1.81
332 " with between	5 000 and 10 000 "	2.16
127 " " "	10 000 " 20 000 "	2.71
50 " " "	20 000 " 30 000 "	2.88
46 " " "	30 000 " 100 000 "	3.05
11 " " "	100 000 " 430 000 "	3.63
Paris, with	2 424 703	4.90

For Intertrigo.—Dust the parts with dermatol.

For Erysipelas.—Paint the affected parts, and the healthy parts around, with a ten per cent solution of ichthyol colloidion.

For Laryngeal Tuberculosis.—Use with an atomizer, a mixture of five parts each of menthol and balsam Peru, ten parts of alcohol, and 300 parts of distilled water.

For Pulmonary Tuberculosis.—Use Beechwood creosote, in emulsion, by enema, in doses of fifteen to thirty minims, every other day, at night.

Lotion for Gonorrhœa.—The following lotion is highly recommended by Waltier, as a remedy for gonorrhœa—

Corrosive sublimate,	1 part.
Antipyrine,	100 parts.
Distilled water,	10,000 parts.
Inject four times a day.	

Antipyrine combined with bromide of potash may be used internally to prevent chordæ.

Balsam Copaiba for Frost Bites.—More than thirty years ago a Russian physician introduced the use of balsam copaiba as a remedy for frost bites. The drug should be used externally, applications being made to the affected part on going to bed at night. Two or three applications are said to be sufficient to effect a cure. According to the *Medical Summary*, the remedy was introduced into this country by Dr. Hugo Engel.

BACTERIOLOGICAL NOTES.

[THE notes appearing in this department are abstracts or translations prepared expressly for MODERN MEDICINE AND BACTERIOLOGICAL REVIEW, from original sources.]

RECENT RESEARCHES RELATING TO THE TYPHOID BACILLUS.

SANARELLI recently reports, in the *Journal of the Pasteur Institute* of Paris, the results of a series of investigations which he has carried on under the supervision of Metchnikoff, for the purpose of determining new and more exact facts respecting the nature of typhoid infection. His experiments were made with the fluid of bouillon cultures of Eberth's bacillus, which had been allowed to remain in the incubating oven for many months, until after the bacilli were all dead and collected at the bottom of the test tube. The results of his experiments, as well as those of others, show that the typhotoxin of Brieger is not produced by the bacilli, but is the result of a decomposition of albuminoids, which occurs in the manipulation of the culture. He found that so long as bacilli were alive and active, the culture fluid was acid in reaction and non-toxic; but after the bacilli were dead, the fluid became alkaline, and simultaneously acquired marked toxic properties, showing that the toxine, while produced by the bacilli, is not thrown off by them, but is retained in their bodies, and is only brought into solution when the culture medium becomes alkaline.

The following is an abstract of [Sanarelli's resumé of his results : —

1. Eberth's bacillus produces a toxine which has a profound effect upon the nerve centers, and when introduced into the body of an animal in sufficient quantities, produces death from collapse.

2. This toxine produces characteristic effects upon the intestinal mucous membrane throughout its entire length, but especially that of the small intestine, causing hemorrhage, tumefaction of Peyer's patches, ulceration, and desquamation of the epithelium.

3. The general symptoms produced in an animal after the injection of typhic toxine, very closely resemble those of typhoid fever in human beings.

4. The bacilli of Eberth are not found to any extent in the intestine, but in the lymphatic glands and channels, the dis-

ease being a veritable lymphatic infection. The microbes multiply in the gland, where they produce their toxine, which is taken into the circulation by absorption.

5. A marked effect of the toxine upon the intestine is to cause a great increase in the number of the bacillus coli, which under its influence become pathogenic and extremely virulent, and acquire the ability to invade tissues and organs lying outside of the alimentary canal. This is the cause of secondary infections, abscesses, etc., due to bacillus coli which accompany typhoid fever.

6. Inoculation against bacillus coli protects against Eberth's bacillus, and vice versa.

7. Inoculation of an animal by Eberth's bacillus causes bacillus coli to disappear in large part from the intestine by inducing an active phagocytosis in the epithelium of the intestine.

It is evident that these investigations have a very important bearing upon the etiology of typhoid fever.

The Influence of Toxines of Microbial Origin upon Thermogenesis.

— Drs. d'Arsonval and Charrin recently reported to the Biological Society the result of calorimetric studies in relation to this question which may be summarized as follows : —

1. Toxines of microbial origin act upon central heat by causing decreased radiation with a corresponding rise of internal temperature.

2. Fever may exist in connection with vaso-constriction due to the use of toxines, pyocyanic, as well as with those causing vaso-dilatation (tuberculin).

3. A calorimeter used in connection with the thermometer is necessary for an exact study of the temperature in the phenomena of fever. The thermometer gives information only in relation to the distribution of heat, being entirely unable to give any information concerning variation in heat production. Over-production may exist simultaneously with an increase in both central and peripheral temperature, or the reverse. There seems to be a demand for some practical method of employing the calorimeter at the bedside, in order to obtain definite and exact therapeutic indications in reference to the treatment of fever.

D'Arsonval showed, in 1881, that a bird gives out less heat than a mammal.

of the same weight, although its central temperature is several degrees higher than that of mammals. He also found that an animal when varnished dies with an enormous depression of both central and peripheral temperature, although the calorimeter showed that a varnished animal produced four times the normal amount of heat.

Action of Light upon Microbes.—Tyndall showed that the vitality of germs was greatly impaired by the action of sunlight. Downs and Blount also showed that the effect of sunlight upon germs is to lessen their activity. Prof. Marshall Ward has recently shown that exposure to sunlight for a few hours is sufficient to destroy the spores of the bacillus anthracis in gelatin culture media. Nocard, Duclaux, Strauss, Roux, and others have proved that light is directly germicidal in its action upon various species of micrococci and bacilli. Koch has shown that the direct rays of the sun will kill tubercle bacilli in two or three minutes, and is always fatal in a few hours. Roux and Yersin believed the effects of sunlight to be similar upon the diphtheria bacillus. Büchner, Janowski, and Geisler have shown that the violet or actinic rays of the sun are most active in destroying germs. Prof. Marshall Ward also demonstrated this. In order that sunlight should act effectively, it is necessary that the spores should be moistened, as dry spores resist the action of sun rays for a long time. It is thus apparent that the sun is one of the most important of all disinfecting agents. It is doubtless this fact which renders tropical countries habitable, since the well-known disinfecting influence of thawing and freezing, of fall and winter, is, of course, absent.

Bacilli Tuberculosis in Cigars.—Dr. Kerez (*Centralblatt für Bacteriologie*) reports the result of experiments which he has been making for the purpose of determining the possibility of the communication of tuberculosis through the medium of cigars. It is a well-known fact that cigar makers are in the habit of making the leaves adhere to the cigar by moistening them with saliva from their own mouths. The force of habit leads them to continue this practice, although in recent times manufacturers provide their workmen with materials for the purpose

indicated. Dr. Kerez made cigars by moistening the leaves with saliva known to contain tubercle bacilli. The cigars were then dried and packed away in boxes in the usual manner. It was found afterward, when the cigars were unrolled and the leaves washed in water, that the infusion thus obtained, having been injected in guinea-pigs, produced consumption, clearly showing that cigars may thus be the means of communicating tubercle bacilli and giving rise to pulmonary disease.

Sub-Varieties of Microbes of Specific Species.—The numerous discrepancies between the observations of different investigators of equal eminence in relation to some of the most clearly defined species of microbes, have led to a more careful study of the morphology of those and other species and of the influence of environment, culture media, etc., upon morphological and bio-chemical characters in bacteria. As a result of these investigations, M. Pére has recently shown that there exist many sub-varieties of bacillus coli. M. Foa has shown the same with reference to the pneumococcus; while M. Pasquale has demonstrated the same fact for the streptococci, and many observers testify to the same in relation to the choleraic vibrios. Sanarelli, in a series of investigations conducted under Metchnikoff, has shown the same for Eberth's bacillus, as noticed in another column.

Germs in Agriculture.—M. Jean Danysz recently reported to the French Academy an ingenious method of ridding the country of small rodents which had become so numerous and destructive that it was impossible to produce any crop. Every acre of land furnished a home for thousands of these pests. The method adopted was to dissolve some gelatin cultures of pathogenic bacteria capable of producing an infectious disease in mice, then soaking a great number of small cubes of bread in this solution, and placing the bread near the holes occupied by the rodents, every day for three days in succession. Within two weeks after this method was adopted, scarcely a live mouse was to be found in the district treated. When the burrows of the rodents were opened, their galleries were found to be filled with dead mice.

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IS THE OPIUM HABIT HARMFUL ?

THE idea that the opium habit could be otherwise than harmful has doubtless never occurred to the average medical man. Nevertheless, astonishing as it may appear, a Philadelphia physician has recently advocated, in a medical journal of wide circulation, the notion that the habit is harmless. We quote his words : —

" Speaking of the opium habit, many physicians still have the idea that it causes a great deal of injury. The habit alone, probably never. A careful investigation into the details of any case will soon convince the experienced observer that the habit is not what produced the decline of health.

" The English government recently appointed a scientific commission to investigate the subject. The most experienced and ablest physicians, who gave the testimony, are unanimously of the opinion that the opium habit has not only no deleterious effect on the general health, but that it proves beneficial in many cases, especially in miasmatic districts, where the use of opium alone secures to the individual the enjoyment of good health. Like many superstitious and wrong ideas, that one concerning the dangerous effects of the opium habit is hard to eradicate, but the evidence proving the contrary to be true is fast accumulating."

A statement like the foregoing is calculated to do a vast deal of harm, not only to physicians, but to their patients, at any rate if it is received with any degree of credence. Physicians are already too reckless in regard to the manner in which they prescribe various preparations of opium and other narcotics. Thousands of opium habitués are annually made such by the prescriptions of physicians.

It has been the lot of the writer to practice his profession for more than twenty years in connection with a large sanitarium, which is annually visited by many persons whose chief object is relief from the opium habit. It has been very rare indeed that the investigation of cases of this kind does not disclose the fact that the habit was begun under the prescription of a physician, the patient only discovering his slavery when too late to emancipate himself. Not infrequently patients have been sent to the writer by physicians for the purpose of being relieved from the baneful influence of this drug.

We can bear most positive testimony to the fact that among some hundreds of cases of this nature which have been under our professional care, we have not in a single instance failed to observe pernicious effects from the use of the drug. It is true the patient has not always been haggard and emaciated, although in the majority of cases there has been marked evidence of physical deterioration ; but there has been almost invariably present, evidence of disorder of the liver, disturbed bowel functions, and often serious indigestion, while nervous derangements of various sorts have been almost universal. In addition to this we have found almost uniformly a marked deterioration in the moral qualities of the one addicted to the use of opium. It is rare indeed that the opium taker is not more or less addicted to falsifying, and not infrequently has a tendency to theft, in addi-

tion to a propensity to lie. A loss of regard for public opinion, a marked depreciation in the individual's sense of propriety in speech and conduct, and other aberrations from the mental and moral state are almost constantly observed, except in cases in which the amount of the narcotic used is very small and the habit of recent origin.

The report presented to the English government by the Commission recently appointed to investigate this subject, is scarcely to be trusted. The Commission was appointed at the instigation of a society which has been for many years belaboring the English government for its attitude in relation to the opium traffic between India and China. The government has been constantly taunted with the fact that it forced opium upon China against the wishes of the Chinese government and at the point of the bayonet, and has encouraged the development of opium raising in India to such a degree that opium has come to be a cheap and common product in that country, and is used by the natives of India very widely within recent years. The demand upon the government for an investigation of this matter finally became so great that it was necessary to give the subject some attention. The government consequently appointed a Commission, the report of which shows very clearly that the commission was composed of men selected with reference to their preconceived opinions in favor of opium, or at any rate the Commission, like the Commission appointed some years ago for the investigation of the origin of cholera epidemics, practically formulated its report before it went out to investigate, and made a report in harmony with the known wishes of the government. The German Commission, sent out at the same time with the English Commission to investigate the case of cholera, found the germ which produced it, and prescribed the remedy by which its dissemination might

be prevented; namely, efficient quarantine; while, on the other hand, the English government found no germs, and put itself on record as opposed to quarantine, which, for a country so largely dependent upon its commercial interests as is England, means paralysis of trade and all the consequent financial evils.

The opium habit is an unmitigated evil, a dreadful vice, a veritable calamity to the individual, and a growing source of danger to human society. We do not know of any way in which a physician could use his professional influence to the greater detriment of his fellows, than by advocating such views as are expressed in the paragraphs quoted above.

ABUSE OF OPERATIONS.

DR. L. G. RICHELOT, surgeon to the Hospital St. Louis, of Paris, writes recently in *L'Union Medicale*, as follows:

"Much is said nowadays about the 'mania for operation,' of which the majority of surgeons are said to be possessed. The abuse of surgical procedures cannot be denied. There are to be found many persons who might be called 'industrial surgeons,' with whom the science of indications rests not upon the study of lesions and symptoms, but upon the study of the credulity of the patient, and who see no other danger in an operation than that which has relation to personal reputation.

"There is to be found still another class, less elevated, who solicit patients upon the street corners, and operate without rhyme or reason. Diagnosis and manual dexterity are matters of no consequence, for antisepsis more or less perfectly carried out too often gives these tyros a relative impunity. It was to such persons as these that Ambrose Paré referred when he said, 'They are a hundred times more to be feared than brigands, murderers, and highway robbers; for one can avoid these by going another way, but the surgeon is sought by the poor pa-

tient, who bares his throat hoping to have relief from the one who robs him of his life."

So common is this mania that the public as well as the profession have become aware of the fact of its existence, and almost every successful surgeon is supposed to be possessed of this mania. This state of public opinion is detrimental alike to the people and to the profession. There is a certain class of patients who are quite as eager to be operated upon as any surgeon may be to operate. The writer's practice has always been never to urge a patient to become the subject of a surgical operation, but has frequently found it necessary not only to refuse, peremptorily, to perform a surgical operation, but to resort to an elaborate and protracted argument to prevent the patient from hurrying away to some irresponsible and reckless surgical tyro who would undertake to perform any operation upon any person, whether indicated or not, provided only that a liberal fee was in sight.

There is, however, another class of persons who, imagining that the skillful surgeon is happy only when he is operating, take alarm at the first suggestion of an operation, imagining the advice to be prompted by an eagerness on the part of the surgeon to operate, rather than a wise consideration of the patient's best interest.

Students hear too much in medical colleges of such remarks as the following : "I spoiled a bushel of eyes before I became a skilled oculist." "Every physician kills a score or two of people before he learns how to handle his weapons." The grave responsibility of the duties of the medical profession, and the importance of careful, conscientious consideration for the interests of their patients, are subjects which are too seldom mentioned and too lightly treated by the majority of medical teachers. A commercial spirit in the profession is quite too common,

and a desire to "make a record" quite too frequently leads young surgeons to undertake operations for which they have no proper preparation, or for which there is no substantial indication.

A medical journal out West writes that a young doctor who is still in his twenty-first year has already performed eleven ovariotomies. The *Medical Record* asks this significant question : "What is the matter with the P—B—ovary?" At the present rate of extirpation, there would seem to be a strong probability that in the near future the principal difficulty will be that it is *non est*.

THE EFFECTS OF SMOKING UPON MUSCULAR WORK.

PROF. VAUGHAN HARLEY, M. D., M. C. P. and Grover Research Scholar, publishes in a recent number of the *Journal of Physiology* (March 22, 1894), the results of an extended series of experiments in relation to causes which influence muscular work. Among the various experiments undertaken by Prof. Harley, some of the most interesting relate to the influence of tobacco-smoking upon muscular work. The idea is generally prevalent among smokers that a larger amount of work can be accomplished under the influence of tobacco than without it,—at any rate, that smoking, even if it does not increase muscular power, lessens the sense of fatigue, and thus enables the individual to continue working longer than he otherwise could do. Prof. Harley's experiments had relation to two points, —

1. The amount of work which could be accomplished ; and —
2. The length of time during which work could be performed before the point of absolute fatigue, with inability to continue work, was reached.

He found, as the result of his experiments, that even moderate smoking in a person accustomed to smoking so that

the primary toxic effects of the nicotine were eliminated, the amount of work which could be accomplished was not increased, and that the approach of fatigue was not retarded. Tobacco-smoking, on the contrary, to use the words of Prof. Harley, "slightly diminishes muscular power and hastens the onset of fatigue."

These important results ought to be brought to the notice of all members of the medical profession, first, for their own individual benefit, and second, for the benefit of the public. There is probably no class of men among whom are to be found a larger proportion of smokers than among physicians. Doubtless a majority of physicians smoke with the idea that smoking enables them better to endure the severe demands often made upon them. These experiments of Prof. Harley, however, clearly demonstrate the fallacy of this theory. Tobacco is not a stimulant, even in the popular sense of the word. It is a narcotic, and so decidedly poisonous in its effects that, as Prof. Harley found, the smoking of even so small a number as four cigars a day in a man accustomed to smoking had a decided effect in lessening muscular work and hastening the approach of fatigue.

Physicians ought not only to take this fact, and the lesson which it teaches, home to themselves, but should acquaint their tobacco-smoking patients with the important results which Prof. Harley has reached. Tobacco, like whisky, is a deceiver. Through its narcotic influence it obtunds the sensibilities of the user, and thus renders him, to some degree at least, oblivious of his condition, whether it be that of hunger, fatigue, cold, perplexity, anxiety, or other discomfort. It does not change the condition, it merely hides it. Surely it cannot be desirable under any but the most extraordinary circumstances that a person be habitually thus narcotized.

The smoking habit is so utterly obnoxious to the spirit of an advanced

civilization that it is a marvel that the vice should be tolerated in decent society, and it is to be hoped that the time is not far distant when tobacco smoking and liquor drinking—even in so-called moderation—will be regarded in the same light as opium smoking, the cocaine habit, and other drug vices.

THERAPEUTIC VALUE OF THE SINUSOIDAL ELECTRICAL CURRENT.

SINCE the first discovery of this current by the writer, a little more than ten years ago, he has made continued use of it, and with increasing confidence in its value. It was not, however, until d'Arsonval demonstrated graphically the peculiar form of wave produced by this current, that its real nature was understood and its characteristic differences from other alternating currents fully comprehended. The gradual increase of this current in potential from zero to maximum, and the equally gradual decrease from maximum to zero, first in one direction and then in the other, is unquestionably the reason for its peculiarly agreeable character, by which we are enabled to apply a current with strength sufficient to produce the most vigorous muscular contraction without producing coincidentally any skin sensation, or indeed any sensation other than that occasioned by the contraction of the muscles. Currents with very rapid alternation may be applied in such a manner as to produce strong excitation of the optic nerve without exciting any sensation whatever in the nerves of the skin.

We have demonstrated, in hundreds of cases, the peculiar value of this current in the relief of pain. When the galvanic and faradic currents utterly fail, this current almost invariably succeeds, except in cases in which the pain is due to some mechanical cause or structural change. That the alternating character of the cur-

rent is valuable, is clearly demonstrated in the following physiological facts deduced by Baron de Wattville: "When the electrode on the nerve is alternately

This influence of the sinusoidal current is particularly marked in its production of powerful muscular contractions without pain or any skin sensation. For this

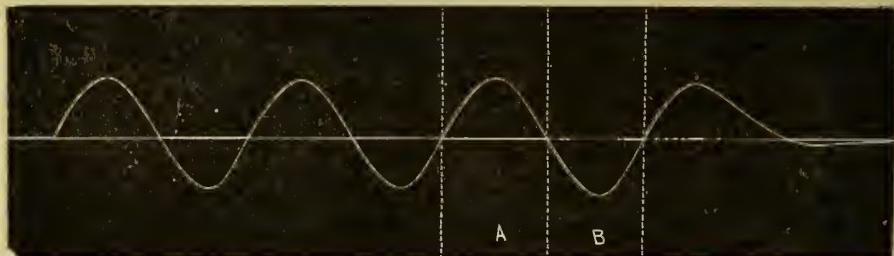


Fig. 1. Sinusoidal Current.



Fig. 2. Ordinary Magneto-electric Current.

changed from anode to cathode, and from cathode to anode, a series of closure excitations are given, which fall alternately in the polar (when the electrode becomes cathodic) and the peripolar (when the electrode becomes anodic) region respectively. Now, in every case the excited region had just before been under anodic influence, and physiology teaches us, as we shall presently demonstrate on the human nerve, that the instant the polarizing current ceases to flow, the anodic region passes into a state of increased excitability. This augmentation is the more marked the longer the anodic influence has lasted. We see, therefore, how it is that voltaic alternatives act more powerfully than simple closures of the circuit, and that their action is intensified by previous current duration. We understand, also, why rapid reversals are the more effectual; for the positive modification after an electro-tonus diminishes rapidly after the circuit has been broken; the longer the interval which elapses between the polar change of the electrode the less the hyper-excitability of the nerve will be, until it has returned to its normal state."

purpose, slow alternations, and a machine producing a current of considerable quantity, is needed. After several years' experimentation, we have produced a machine which gives us a most excel-

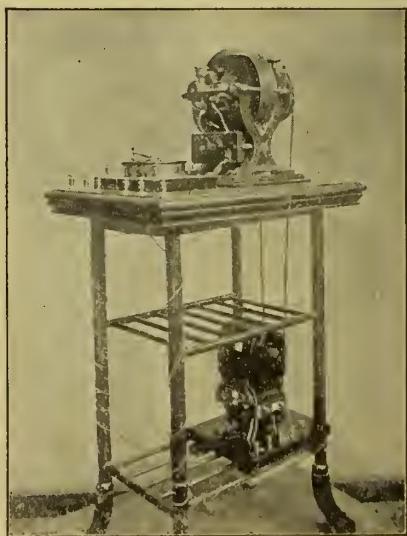


Fig. 3. New Sinusoidal Apparatus.

lent current and extraordinary results. The accompanying cuts show the form of wave produced by this machine, and also that obtainable from an ordinary magneto-electric apparatus, as well as the machine itself.

REVIEWS.

The Practice of Medicine.—By Edwin M. Hale, M. D., Gross & Delbridge, publs., Chicago.

Dr. Hale has long been known as one of the leading homeopathic physicians of Chicago and of the United States. That the doctor entertains notions which could scarcely be considered orthodox by an enthusiastic disciple of Hahnemann, is clearly evidenced by the following extract from his preface :—

"The aim of this book is to present to the physician the most practical way of treating disease by medicinal and hygienic methods. To do this I have drawn upon my experience as a general practitioner for forty years; and upon the experience and observation of my colleagues of all schools of practice, so far as I believed them trustworthy. I entertain the broad belief that while the law of *Similia* is the chief guide in the selection of drugs, there are other methods of cure which should not be neglected. While I believe the application of the law of *Similaris* is very wide, I know that it has its limitations; that remedial medicaments which act chemically and physiologically cure some diseases promptly and safely. In the light of our present knowledge of ferments and micro-organisms, we know that many diseases require medicines which destroy the germs which are the cause of diseases; and that unless such agents are used conjointly with strict aseptic measures, the most carefully chosen medicines are powerless to cure. It is my conviction that the physician who selects his remedies in accordance with the law of *Similia*, and by their primary symptoms alone, narrows his therapeutic resources, and deprives his patients of means of cure which it is his duty to apply. By clinging to one and rejecting all other methods of cure, the physician fails in his duty to his patients.

"If I have quoted freely from writers of all systems of practice, I have done so because I have desired to give the best information at present attainable, and I have been careful to give due credit to all authorities.

"This is an era of preventive medicine. The physician who prevents disease is worthy of equal, if not more, honor than one who cures. Therefore I have made hygiene as prominent as medicinal therapeutics. In relation to dose, I have left the size and repetition to the individual experience and observation of the practitioner, except in cases where my own experience warranted me in giving explicit directions. My conviction is that any dose, from the crude drug to the most minute particle of a drug, may prove curative. There is no fixed law regulating dose, and there never will be."

The liberal sentiments expressed, we feel sure, will be a surprise to those who are not aware of the wonderful progress made in recent years on the part of all schools of medicine toward the ideal system of rational medicine in which no school or pathy will be recognized, but in which disease will be treated strictly upon physiological principles, and therapeutics will be based upon the results obtained in the researches now being carried forward in physiological, bacteriological, chemical, and biological laboratories, rather than the empirical results of experience alone.

Dr. Hale's book, we trust, will prove a valuable means of enlightening members of the homeopathic profession with reference to the magnificent results of modern inquiry in relation to pathological and physiological medicine, and it will also serve to open the eyes of many members of the regular profession to the fact that there are to be found in the ranks of homeopathic physicians men whose attainments in medical science are worthy of high respect.

A Report on Aseptic and Septic Surgical Cases, with Special Reference to the Disinfection of Skin, Sponges, and Towels.—By C. B. Lockwood, F. R. C. S., Assistant Surgeon to St. Bartholomew's Hospital.

This very interesting report includes the directions for disinfection of hands, towels, and sponges, which we present in another column, and which are the result of a large number of carefully conducted culture experiments for the purpose of determining the exact value of the various methods of disinfection of the skin and sterilization employed. The author gives due credit to our friend, Dr. W. B. Jones, House Surgeon of the Hospital, by whom the experiments were made.

Beds and Bedrooms.—This is the title of a very able and useful paper which appears in the February number of the *Sanitarian*, the leading sanitary journal of the United States, edited and published by A. N. Bell, A. M., M. D., one of the most experienced sanitarians in the country. Dr. Bell is not only well versed in public hygiene, but also in all that pertains to the hygiene of the home. In this interesting article he considers the bed from the standpoint of the leading nations, ancient and modern, and goes into the subject in a most thorough manner. The time spent in the bedroom is normally about one third of the entire life, and it is evident that the conditions to which the body is subjected during sleep must have a highly important influence upon the health and longevity.

The paper is not only instructive to the common people, but also contains much which will be new and instructive to physicians. It is the duty of every physician to instruct his patients in the care of health, as well as to aid them to the recovery of health when lost. This little work will afford much valuable and

interesting matter which the doctor can admirably use in this way.

Dr. Bell has received so many requests for copies of the paper, that he has promised to publish it in pamphlet form. Any of our readers who desire it can obtain copies by addressing A. N. Bell, A. M., M. D., Brooklyn, N. Y.

The Radical Cure of Femoral and Inguinal Hernia.—By C. B. Lockwood, F. R. C. S., London.

This paper is based upon the results of fifty-seven operations performed by Prof. Lockwood, whose accuracy as an observer and skill as an operator are such as to give his statements more than an ordinary amount of authority. His operations were, as he states, in reality operations of necessity and not of expediency, since the patients were not able to wear trusses for various reasons, and hence were practically disabled. The author's conclusion from the study of the results in his cases, is, that the operation for the radical cure of inguinal and femoral hernia is, "when done upon proper cases, as successful as any operation in surgery."

Differential Diagnosis of Common Diseases of the Eye.—Designed for the use of general practitioners, by W. F. Conners, M. D., Oil City, Pa.

This is an ingeniously arranged chart, the purpose of which, as stated by the author, is to give the family physician a comparative table of the common diseases of the eye, without undertaking to cover all the circumstances or complications of the various maladies of the eye. The purpose is to assist the general practitioner in making a diagnosis without instruments and without the aid of special knowledge, which can be acquired only by special training. A careful examination of the chart leads us to believe that it is well calculated to meet the purpose desired.

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PUBLISHERS' DEPARTMENT.

INFORMATION FOR CONSUMPTIVES AND THOSE LIVING WITH THEM.—The New York State Board of Health has recently published, in English, Italian, and Arabic the following information. The circular, giving information to consumptives and those living with them, contains so much concise and wise instruction we are glad to reproduce it for the benefit of our readers. Information of this character should be diffused as widely as possible.

"Consumption is a disease which can be taken from others and is not simply caused by colds. A cold may make it easier to take the disease. It is usually caused by germs which enter the body with the air breathed. The matter which consumptives cough or spit up contains these germs in great numbers—frequently millions are discharged in a single day. This matter, spit upon the floor, wall, or elsewhere, is apt to dry, become pulverized, and float in the air as dust. The dust contains the germs, and thus they enter the body with the air breathed. The breath of a consumptive does not contain the germs, and will not produce the disease. A well person catches the disease from a consumptive only by in some way taking in the matter coughed up by the consumptive.

"Consumption can often be cured if its nature is recognized early and proper means are taken for its treatment. In a majority of cases it is not a fatal disease.

"It is not dangerous for other persons to live with a consumptive, if the matter coughed up by the consumptive is at once destroyed. This matter should not be spit upon the floor, carpet, stove, wall, or street, or anywhere except into a cup kept for that purpose. The cup should contain water, so that the matter may not dry, and should be emptied into the closet at least twice a day and carefully washed with hot water. Great care should be taken by a consumptive that his hands, face, and clothing do not become soiled with the matter coughed up. If they do become soiled, they should be at once washed with hot water and soap. When consumptives are away from home, the matter coughed up may be received on cloths, which should be at once burned on returning home. If handkerchiefs are used (worthless cloths which can be burned up are far better), they should be boiled in water by themselves before being washed.

"It is better for a consumptive to sleep alone, and his bed-clothing and personal clothing should be boiled and washed separately from the clothing belonging to other people.

"Whenever a person is thought to be suffering from consumption, the name and address should be sent at once to the Health Department, on a postal card, with a statement of this fact. A medical inspector from the Health Department will then call and examine the person, to see if he has consumption, providing he has no physician, and, if necessary, will give proper directions to prevent others from catching the disease.

"Frequently a person suffering from consumption may not only do his usual work without giving

the disease to others, but may also get well, if the matter coughed up is properly destroyed.

"Rooms that have been occupied by consumptives should be thoroughly cleaned, scrubbed, whitewashed, painted, or papered before they are again occupied. Carpets, rugs, bedding, etc., from rooms which have been occupied by consumptives, should be disinfected. The Health Department should be notified, when these articles will be sent for, disinfected, and returned to the owner free of charge, or if he so desires, they will be destroyed."

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TREATMENT OF CHANCRE BY PEROXIDE OF HYDROGEN.—Dr. Willard Parker Worster, of New York, recently reported, in the *Journal of Cutaneous and Genito-Urinal Diseases*, a number of cases of Hunterian chancre treated by means of peroxide of hydrogen, which seem to demonstrate the correctness of his assertion that "peroxide of hydrogen cures chancre in the shortest possible time, and without pain." Some of the cases treated were extremely bad, and in a sloughing state. The peroxide should be fresh, and applied in the form of a spray by means of a hard rubber instrument. Some of the very worst cases were completely cured in two or three weeks.

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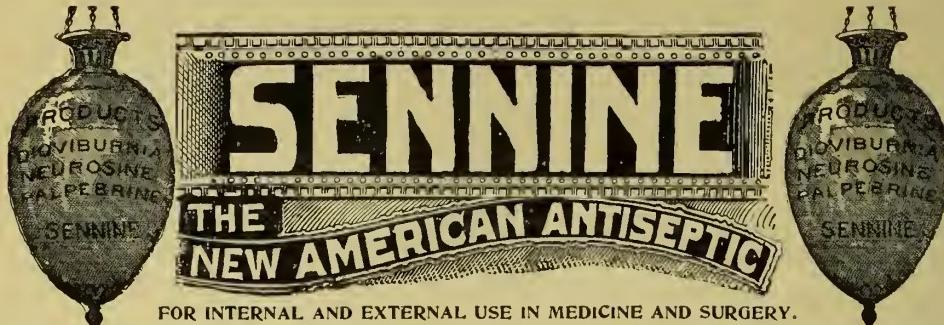
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H. Tuholse, M. D., Professor Clinical Surgery and Surgical Pathology, Missouri Medical College, also Post-Graduate School of St. Louis.

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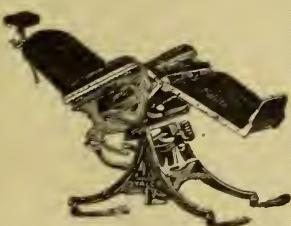


Fig. V—Semi-Reclining.

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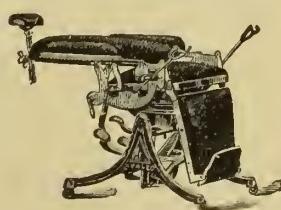


Fig. XVII—Dorsal Position.

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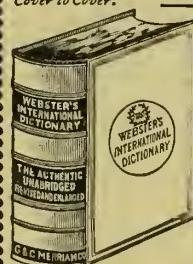
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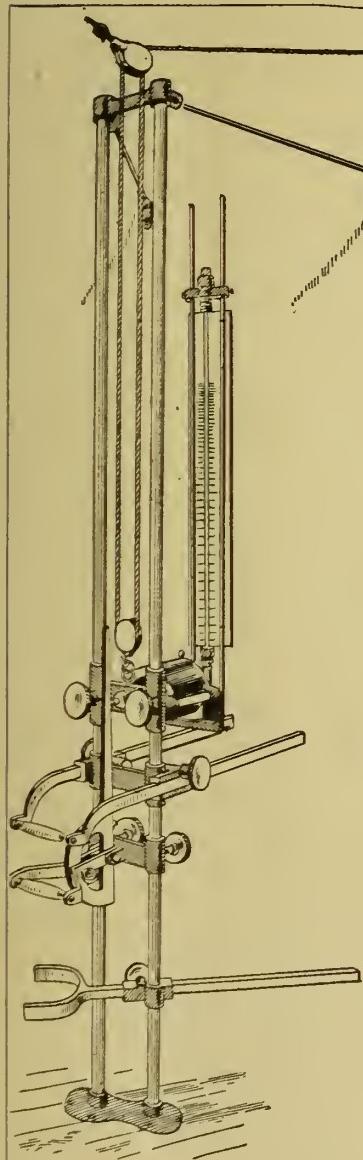
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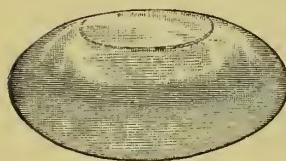
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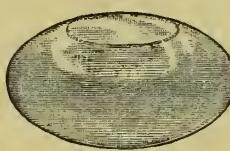
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JUNE, 1894.

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Bulletin of the Sanitarium Hospital and Laboratory of Hygiene.
SANITARIUM, BATTLE CREEK, MICH.

Edited by

J. H. KELLOGG, M.D.

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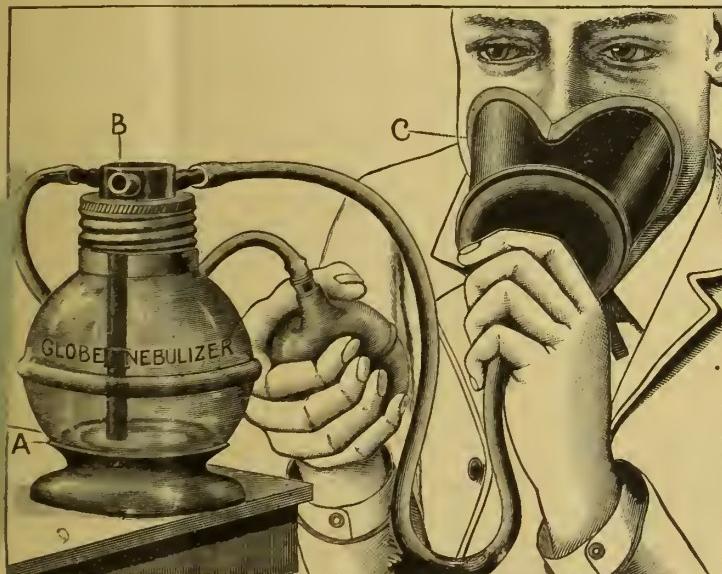
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a few figs are used, but to distinguish it from all other laxatives, and the United States Courts have decided that we have the exclusive right to apply this name to a laxative medicine. The dose of

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— AND —

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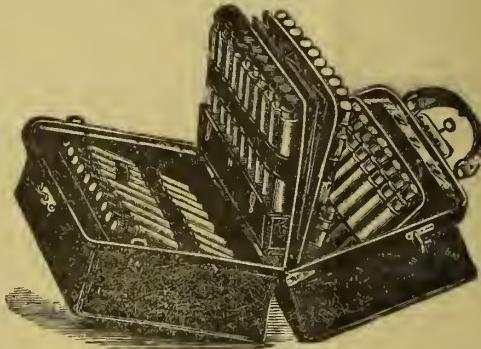
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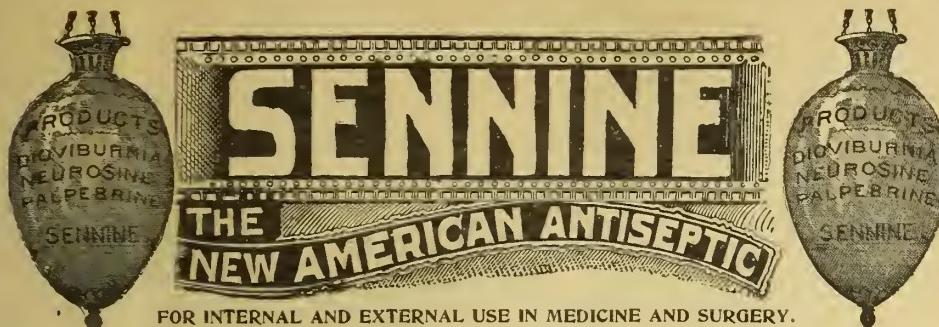
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L. Ch. Boisliniere, M. D., Prof. of Obstetrics, St. Louis Medical College.

St. Louis, June 18, 1888.

I have given DIOVIBURNIA a fair trial, and found it useful as a uterine tonic and antispasmodic, relieving the pains of dysmenorrhœa, and regulating the uterine functions. I feel authorized to give this recommendation of DIOVIBURNIA, as it is neither a patented nor a secret medicine.

L. CH. BOISLINIÈRE, M. D.

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St. Louis, June 20, 1888.

I cheerfully give my testimony to the virtues of a combination of vegetable remedies, prepared by a well-known and able pharmacist of this city, and known as DIOVIBURNIA, the component parts of which are all

well known to all physicians, and therefore have no relation to quack remedies. I have employed this medicine in cases of dysmenorrhœa, suppression of the catamenia, and in excessive leucorrhœa, and have been much pleased with its use. I do not think its claims (as set forth in the circular accompanying it) to be at all excessive. I recommend its trial, believing it will give satisfaction. Respectfully,

JOHN B. JOHNSON.

H. Tuholse, M. D., Professor Clinical Surgery and Surgical Pathology, Missouri Medical College, also Post-Graduate School of St. Louis.

St. Louis, June 23, 1888.

I have used DIOVIBURNIA quite a number of times—sufficiently frequently to satisfy myself on its merits. It is of unquestionable benefit in painful dysmenorrhœa. It possesses antispasmodic properties which seem especially to be exerted on the uterus.

DR. H. TUHOLSE.

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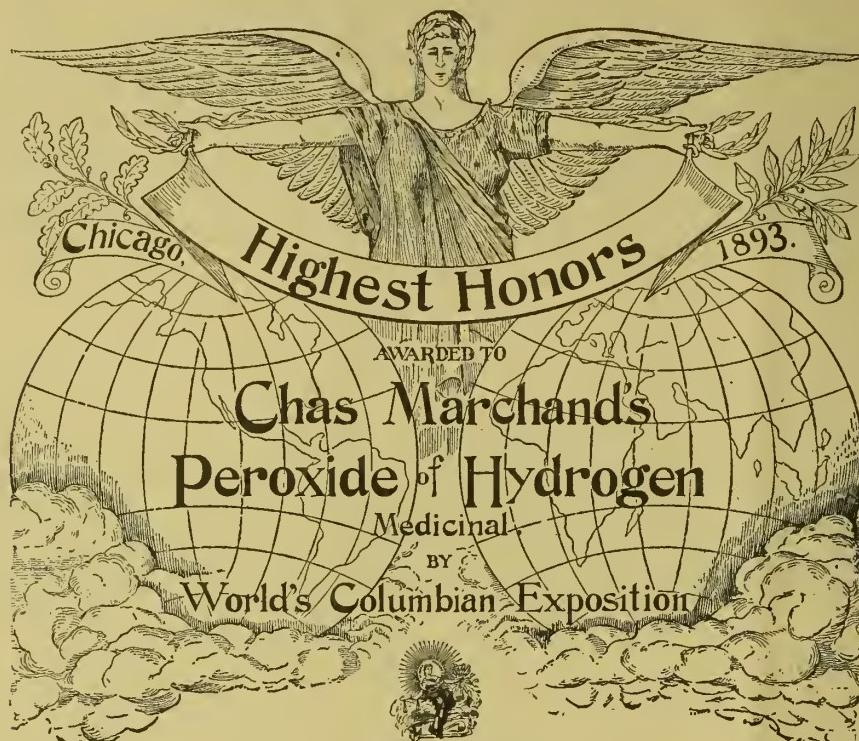
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Bi-lateral Peripheral Facial Paralysis (Neuritis of both Seventh Cranial Nerves).
Patient attempting to smile.

See Report of Case No. 9, Page 130.



Same Case after Ten Weeks' Treatment.
Patient able to use all the muscles on both sides of face.

MODERN MEDICINE

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BACTERIOLOGICAL REVIEW.

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NO. 6.

ORIGINAL ARTICLES.

THE VOLUNTARY MOTOR MECHANISM AND SOME OF ITS DISEASES.—MOTOR PARALYSIS, WITH ILLUSTRATIVE CASES.

BY W. H. RILEY, M. D.,

Sanitarium, Battle Creek, Mich.,

Member of the American Neurological Association, etc.

(Concluded.)

DISEASES AFFECTING THE LOWER SEGMENT OF THE MOTOR PATH.

CASE 8.

Diagnosis. — Multiple neuritis, caused by malarial infection.

The patient has had remittent malarial fever for the past year. About two months ago, after a severe attack of the fever, she began to have numbness and a weakness in the lower limbs. In a short time there developed numbness in fingers and hands, and with the numbness a weakness in the same parts, so that the patient had difficulty in using her hands. Her lower limbs also grew gradually weaker, and in attempting to walk, her ankles would bend in sidewise under her, and allow her to fall to the floor. The loss of sensation was so great in the legs and feet that she could not tell from the sensation whether her shoes were on her feet or not. The above symptoms were all present and increasing in severity for two months before examination here.

Examination. — Patient was unable to walk, and consequently went about in a wheel chair. In attempting to walk with the aid of her nurse, she staggered about a great deal, and this incoördination was very much increased when the eyes were closed. The body also swayed a good deal

in attempting to stand still with the eyes closed. All movements in the upper and lower extremities were weak, slow, and awkward. The knee-jerk was absent in both legs. There was decided anaesthesia in the feet and hands, and various paræsthesiæ in the legs above the feet and in the arms above the hands; also a soreness of the muscles in these parts. The patient had a sallow skin. Her general nutrition was poor, digestion slow, and heart weak.

She was placed under the care of a trained nurse, and the following treatment administered:

Galvanism was applied to the feet, legs, hands, arms, and spine daily. Fomentations were given to the bowels and liver, and massage was given three times weekly. Alternate applications of heat and cold to the spine were made three times weekly. A full electric bath was given once a week. Hot blanket packs to the arms and legs were given daily, to be followed by cool wet cotton packs to the same parts, to be worn all night. The patient was instructed to drink freely of water. The bowels were regulated by proper diet. The patient was also instructed to begin light exercise, which was gradually increased, with improvement in strength.

A note from the record of the case one month after treatment was as follows:

"The soreness and pain have entirely left the muscles. The numbness and anaesthesia have almost entirely left the hands, and greatly diminished in the legs and feet. The patient has gained much in strength, has left her wheel chair, and walks all about with a cane."

The patient remained under treatment another month, and continually grew stronger, and her symptoms of numbness, pain, and anaesthesia faded away rapidly.

After ten weeks' treatment, all the above symptoms had entirely disap-

peared, except a slight numbness in the hands and feet. The patient was able to walk long distances without fatigue, and could use her hands quite as well as ever.

The rapid improvement in this case was quite unexpected by the patient, and she went home delighted with the results of treatment.

CASE 9.

Diagnosis.—Double peripheral facial paralysis.

The patient was a man aged 25 years. Within a few months previous to the beginning of the paralysis in the face, he had had two attacks of la grippe, and after having la grippe, did not enjoy good health. For two or three weeks before the above trouble developed, he suffered a great deal with rheumatic pains in all parts of the body, and especially in the muscles about the face, on both sides. These pains were probably rheumatic in character. There was also a soreness and a tenderness of the muscles about the face and neck.

The paralysis developed quite suddenly. It made its appearance on the left side of the face three days before the right side was affected. When fully developed, it was quite complete, and involved all the muscles supplied by the seventh cranial nerve on both sides of the face, but was more pronounced on the left side. The facial furrows were obliterated, the angles of the mouth drooped, and the patient could not pucker the lips as in whistling. It was impossible for him to close the eyes. The whole face was a blank, and entirely devoid of any emotional expression. He might be convulsed with laughter, and not show a trace of a smile on his face. There was a feeling of discomfort and numbness about the face, but there was no anaesthesia.

A careful examination of the electrical irritability of the nerve and muscles was made with both the faradic and the galvanic currents. As the muscles of the right side of the face were not paralyzed until three days after those of the left side, the electrical irritability of the nerve and muscles of the right side of the face before it became paralyzed was taken for the normal condition, and the results of the electrical examination of the nerve and muscles of the left side (as

well as of the right side after it became paralyzed) were compared with this normal as a standard.

During the first week of the paralysis, the electrical irritability of both nerve and muscles gradually increased to both the faradic and the galvanic currents. After this the faradic and galvanic nerve irritability gradually decreased to about the end of the sixth week. From this time it gradually increased during the time the patient was under treatment (which was ten weeks), and after ten weeks it gradually increased until some weeks later, when an examination was again made, showing that it had reached very nearly the normal line.

The muscular irritability to the faradic current followed very closely the nerve irritability to the faradic current. The muscular irritability to the galvanic current increased quite rapidly for the first week or ten days, and then decreased slightly to the end of the third week. From this point it increased again to the end of the fifth week, and then gradually decreased, being very near to the normal at the end of the ten weeks, and finally reaching the normal a few weeks later. The second rise in this galvanic irritability of the muscles was accompanied with slow contractions of the muscles, characteristic of the reaction which is present in the muscle when there is degeneration of the nerve fiber which supplies the muscle. The anodal closure contraction approached that of the cathodal closure, and in some of the tests the two were equal.

These electrical changes in the muscles are represented by the curved lines on the chart, which see. The line marked "normal line" represents the irritability of the muscles on the right side of the face previous to paralysis. The continuous curved line represents the faradic irritability of the muscles during the time of treatment; while the dotted curved line represents the galvanic irritability of the muscles. As the irritability of the nerve to both galvanic and faradic currents closely followed the faradic irritability of the muscles, lines representing the nerve irritability to both currents are here omitted, being practically represented by the curved line showing the faradic irritability of the muscles as shown on the chart.

These electrical examinations were

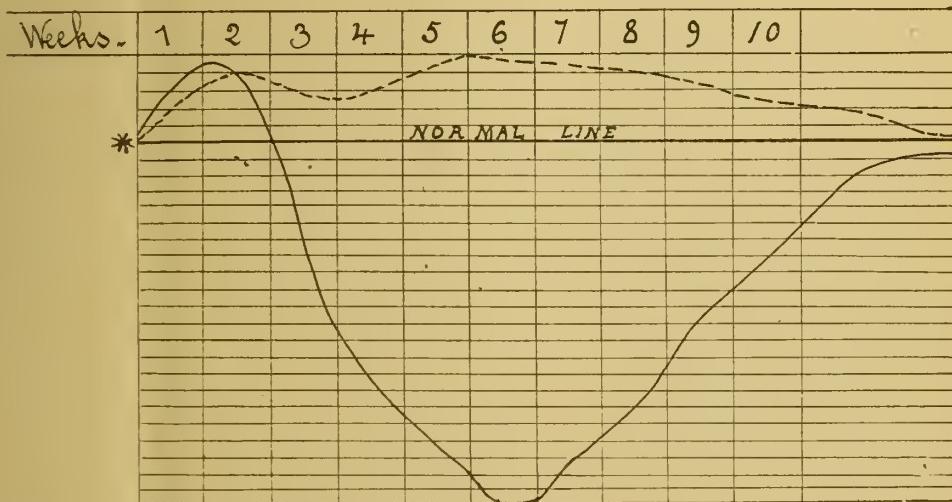
made carefully once a week, and electrical measurements were made with instruments of precision.

The curves here shown on the chart, of the muscular irritability to both faradic and galvanic currents, are a fair representation of the electrical changes which occur in muscles that are paralyzed by an inflammation of the nerve supplying the muscles, and may be taken as a representation of the electrical changes in the muscles in this class of cases. The electrical changes will vary with the severity of the cases, and so of course would not be the same in every case.

With the decrease in faradic irritability of the nerve and muscle, there is usually an increase of the galvanic irritability of the muscles. This is caused by changes in the muscles, accompanying the destructive changes in the nerve.

This patient was placed under treatment consisting of the application of hot fomentations to the face for one hour twice daily; continuous and interrupted galvanic currents were applied daily for ten minutes on each side of the face, at the beginning of the trouble, and later a faradic current and massage were used.

The patient made good progress, and



Curves of faradic and galvanic irritability of the muscles on the left side of face in case No. 9. Continuous line represents the faradic irritability. The interrupted line represents the galvanic irritability.

* Beginning of Paralysis.

One point, as shown in this case, which I particularly wish to have noted, is the increase of nerve irritability to both galvanic and faradic currents in the early stages of the disease. This is a point which is frequently overlooked, and in many standard text-books on the subject is not mentioned at all. I am sure, from my examination of several cases, that an increase of nerve irritability is present in nearly every case of this kind at the beginning of the paralysis.

The downward curve of the line on the chart, represents the decrease of nerve and muscle faradic irritability, and it also represents the time during which degenerative changes are taking place in the nerve; while the upward curve of the same line is a measure of the time during which regenerative and constructive changes are taking place in the nerve.

finally recovered. He remained under treatment ten weeks, at the end of which time he was able to move all the muscles of the face quite as well as ever, although there was a little stiffness and awkwardness still remaining at this time.

Photographs of this case, one before treatment, showing the patient attempting to smile, and the other representing a similar attempt after treatment, are shown in the frontispiece, which see.

CASE 10.

Diagnosis.—Chronic stage of poliomyelitis anterior.

The patient was a girl twelve years of age. She came for treatment for paralysis of the left leg, and gave the following history:—

At the age of about three years she was taken sick quite suddenly with a fever,

and when she awoke the next morning, she was unable to move either of her lower limbs or her left arm. The right leg and the left arm soon improved, and in a few weeks she was able to use them as well as ever; but the left leg improved little and very slowly.

When I examined this case, some nine years after the onset of the trouble, the muscles of the left leg were paralyzed, some completely, others partially. The whole leg was wasted, but especially so below the knee. The complete paralysis of the anterior tibial muscles allowed the foot to turn outward, and caused a well-marked talipes valgus. The temperature of the leg was much below the normal, and icy cold to the touch below the knee. The knee-jerk was absent. Tactile, temperature, and pain sensations were normal. The electrical irritability of the nerves and muscles in the front of the leg, was absent to both galvanic and faradic currents. It was impossible to get any contraction in the peroneal and anterior tibial muscles in the left leg by the application of either current. Slight contractions were produced in the gastrocnemius with a strong galvanic current. The muscles above the knee responded slightly to strong currents, both galvanic and faradic.

The seat of the lesions in this case, as in all similar cases, was in the anterior horn of the grey matter of the spinal cord; the cord during the acute period of the disease being affected at different levels, but most profoundly in the lumbar region, which is related to the muscles which were completely paralyzed and most wasted.

The lesion in this class of cases is always a hemorrhage or an inflammation. There is much evidence to support the idea that acute poliomyelitis may be referred to an infection as its cause. Marie, of Paris, particularly, holds to this opinion. In nearly every case the inflammatory process is more severe in some parts of the cord than in others. Hence the limbs that are related to the parts of the cord least affected, usually recover; while those parts of the body that are related to the parts of the cord profoundly affected, and in which many of the motor cells are destroyed, never reach a complete recovery.

The case under consideration was placed under treatment consisting of the

application of an interrupted galvanic current to the muscles of the leg daily. The muscles in which no contractions could be obtained, received as much attention as those which responded to the current. The galvanic current was also applied to the spine, by placing a large electrode, to which the negative pole was attached, over the abdomen; and the positive pole, attached to a smaller electrode, was applied along the spine daily. Hot blanket packs and warm leg baths were applied to the paralyzed limb to raise its temperature, increase the circulation, and improve its nutrition. Massage and exercise also entered into the daily program of treatment.

After taking the above treatment for some weeks, the patient showed some signs of improvement. Some of the paralyzed muscles responded more readily to the current, and were firmer and more elastic to the touch.

After about three months of persistent treatment, the anterior tibial and peroneal muscles of the left leg, in which not the slightest contraction could be perceived, either by the sense of touch or sight, at the beginning of treatment, responded to the interrupted galvanic current.

The patient continued her treatment for three months longer, and during this time made gradual and constant improvement. After six months' constant treatment the patient was advised to rest from treatment for a few months. After the interval of rest she returned and resumed her treatment. All of the muscles responded quite readily to the galvanic current; some better than others. Her gait, which at the beginning of treatment was painfully awkward, had improved to such an extent that the patient could get around comfortably, and walk on the bottom of her foot without the ankle turning outward, as was the case at the beginning of treatment. The limb had increased in size and grown to nearly the length of its mate. The few muscular fasciculi, which were the only remnant of the peroneal and tibial anticus muscles at the beginning of treatment, had developed and grown into a fair-sized muscle under treatment.

A photograph of the position and size of the two legs after a course of several months' treatment, is shown on page 133.

This case illustrates what can be ac-

complished by proper and persistent treatment in many cases of that large class of paralyses which are usually described as chronic poliomyelitis anterior, and which are usually turned aside as cases for which nothing can be done in the way of regaining the motor power which has been lost by the disease.

In many cases of this form of paralysis, some of the cells in the anterior horn of the grey matter of the spinal cord are entirely destroyed, and consequently the motor nerve and muscular fiber that are in physiological relation with the spinal motor cells, soon degenerate and are obliterated. This condition is, of course, beyond the reach of medical help; but there are in these cases motor cells in the spinal cord, which, although they have been severely dealt with by the inflammatory process, still retain some life and vitality, and consequently the motor nerves and muscles in relation to these cells are not completely degenerated, but are capable of being invigorated and brought into greater activity.

How are we to distinguish between these two conditions, one in which the spinal motor cell with its related motor nerve and muscular fiber is completely destroyed, and a condition in which there still remains some life in these elements?

It has been held and taught by the profession that when no contractions of the paralyzed muscle could be developed in this class of cases, with neither the galvanic nor the faradic currents of such strength as could be borne by the patient, that electrical treatment of these muscles was useless. Our own experience in the case here reported, and in many others, does not lead us to this conclusion. In ordinary clinical examinations, muscular contractions are perceived through the senses of sight and touch; but the contractions in this class of cases may be present, yet so slight as to evade these methods of observation, even when the strongest current that can be borne by the patient is applied to the muscles.

Certain muscles in the case here reported were treated daily with the galvanic current for a period of three months before any muscular contractions were observed, yet these muscles improved under treatment to the extent that the patient had gained some will-power over them.

The good results which we see in this

class of cases, by the treatment of the paralyzed muscles with an interrupted galvanic current, is not due to the influence of the current on the muscles alone. In order to bring about any permanent improvement in the muscles, the life and vigor of the spinal motor cells, which is the source of nutrition of the muscles, must be improved and increased. The spinal motor cell, the motor fiber arising from it, the muscular fiber over which it presides, form a trophic unit, the center of which is the body of the nerve cell. When the muscles are treated and made to contract, the good results are not lim-



Case No. 10 after a course of treatment. Left leg increased in size and muscular power. Deformity diminished.

ited to the muscle alone, but the electrical treatment influences in a reflex manner the motor spinal cell as well. If there is the slightest muscular contraction, although this may not be visible or felt, it is sufficient for a basis of operation, and the case will, as a rule, make improvement under proper treatment.

The apparent absence of muscular contraction to strong galvanic or faradic currents in the wasted and paralyzed muscles, does not necessarily indicate that the paralyzed muscles are beyond help, but should be treated diligently for a period of from three to six months. If visible contractions of the muscles can be developed in this time, the case is favorable for further improvement. If not, we are justified in concluding that it is beyond help. When these muscles are treated daily with the interrupted galvanic current for a period of from three to six months, they very often respond to the extent that the contractions of the para-

lyzed muscle are visible to the eye. Continued treatment from six months to two years frequently makes a comparatively useful limb out of one which without such treatment would be a practically useless member for life.

CASE 11.

Diagnosis.—Paralysis of the left seventh cranial nerve, caused by a neuritis of the same.

The patient was a young lady aged 27 years; of a phlegmatic temperament, but gave no history of rheumatism.

The day before the trouble developed, she thought she took cold by exposure. Paralysis in the left side of the face developed suddenly, and involved all the muscles of this part, so that she was unable to close her eye or to move any of the muscles of the left side of the face. The facial furrows were partially obliterated, the angle of the mouth drooped, and the food would collect between the cheek and teeth while eating.

Electrical examinations were made of nerve and muscles. The faradic irritability of the nerve and muscles was much diminished. The galvanic irritability of the muscles was increased. The contractions of the muscles with the galvanic current were slow and diffused over an area at some distance from the point of contact of the small electrode with the face, characteristic of the muscular contractions that are present when nerves are in the early stage of degeneration or inflammation.

The electrical changes in nerve and muscles were quite similar, but not identical with those that were present in Case 9, just reported; they indicated a more complete destruction of the nerve fiber.

The patient was placed under treatment consisting of the applications of heat and the use of the galvanic current to the paralyzed muscles, and later the use of the faradic and galvanic current and massage. This was kept up for three months, when the patient was dismissed from treatment. The recovery in this case was quite complete, as she was able to close her eye and had quite good control of all the paralyzed muscles on the left side of the face.

CASE 12.

Diagnosis.—Myelitis of the lumbar region of the spinal cord, due to an injury.

The patient was a man aged 38 years.

Ten months previous to my examination, he received a severe injury of the lower spine in a railroad accident, producing complete paralysis of both legs; also paralysis of the bladder. A short time after the accident, the left leg began to improve so that in a few weeks he was able to move it some, but the right leg made no improvement whatever. He came to the Sanitarium in a wheel chair. Was unable to stand on his feet, and could not move a muscle nor a joint in the right leg, although he was able to use the left leg some. Since the accident and up to the time of my examination, he had used a catheter constantly to empty the bladder. The bowels were also obstinately constipated, and the heart was weak and irritable. The temperature was normal. Knee-jerk on both sides was very much exaggerated, but especially so in the right leg, which was completely paralyzed. The superficial reflexes were also increased. There was no anæsthesia in the left leg, but there was anæsthesia to touch and temperature, well marked, all over the right leg, but more marked on the outside. Pus and mucus were found in the urine.

The patient was put on treatment consisting of applications of heat to the spine for one hour daily, at a temperature that could be borne without pain or burning, sitz baths, massage, the use of the galvanic current to the spine, and the faradic current to the muscles of the legs, with passive and active exercise, manual movements, etc.

The bladder also received attention, and was treated by being washed out and by the use of electricity and by medication.

The patient began to gain from the first. At the end of two months he had gained 20 pounds in weight, and was able to walk five or six miles daily with his crutches. The left leg had increased in strength, and as near as the patient could judge, was as strong as ever. The right leg was still weak, but he was able to perform all the movements with it except flexing the ankle. The flexor muscles of the ankle were still weak, and allowed the toes to drag.

During the next month of treatment he had gained so that he had thrown away his crutches, and was able to walk two or three miles at a time with one cane. The muscular power of the right leg was still increasing. He continued under

treatment four months in all. At the end of this time the left leg was practically as strong as ever. He was able to use all the muscles of the right leg quite as well as ever, except the flexors of the ankle. These were still weak, but not useless. He was able to get around and walk quite well with a cane, and went home much pleased with his rapid recovery.

THE RELATION OF STATIC DISTURBANCES OF THE ABDOMINAL VISCERA TO DISPLACEMENTS OF THE PELVIC VISCERA.*

BY J. H. KELLOGG, M. D.,
Battle Creek, Mich.

THE most characteristic feature of the new medical science to which the present century, and particularly the last half of it, has given birth, is the idea that health getting is not a matter of magic or of pill swallowing, but instead, in the majority of cases, at least, a matter of education and training. The chronic invalid is ill because he or she has violated the laws of health. Rational medicine regards disease as the result of the operation of nature's laws, and not a consequence of chance or of supernatural agencies. It would seem self-evident that the tissue changes, the functional disturbances, the pathological processes which result from the long-continued violation of nature's laws, are not to be remedied by the most ingeniously managed medicinal antidoting any more than by the blind hopefulness of the faith healer or the mummeries of the mind curist. Nevertheless, it is a sad fact that too many members of the medical profession have failed to recognize that in its onward march of progress, true medical science has left behind the specifics and panaceas of the old régime, along with the astrology and alchemy of an earlier age, and are still engaged in combating disease on the basis of an effete and false philosophy, or else blindly following an unphilosophical and ever-changing empiricism. This statement is true of every branch of medicine, but perhaps applies with less force to the department of gynecology than to any other, for the reason that this branch of medical

science is almost wholly a creation of the last half century, and hence carries a smaller number of the ancient barnacles which adhere so tenaciously to almost every branch of practical medicine.

Rational medicine, as expounded first by Bigelow, then Holmes, and later by a whole generation of laboratory-trained physicians, recognizes as necessary, in chronic cases, the control of the entire life of the invalid. Grave chronic disease involves not a single organ but many, usually, in fact, the entire body; and its cure necessitates, first of all, that the habits of the patient shall be strictly conformed to such principles and rules as will efficiently and curatively modify his disordered vital processes. Health is as much a matter of growth and development as is the sprouting of an acorn, the growing of an oak, or the raising of a crop of wheat. The rational physician keeps ever in mind the fact that the real curative force resides not in his medicine case, but in the constitution of the patient. Nature is the real curative force. The physician really assists his patient toward recovery only when he studies the purpose of nature in her efforts, and supplies conditions which will aid nature in her work.

In no department of medicine do these principles find a better opportunity for eminently apt and proper illustration than in gynecology. But the purpose of this paper is not to dwell upon general principles, but to elucidate the governing ideas and to illustrate the practical application of a single point in etiology and therapeutics. The facts presented in this paper support the following propositions:—

1. *Displacement of the pelvic viscera is not, as a rule, an isolated pathological condition, but is associated with similar static disturbances of the viscera of the abdominal cavity.*

2. *The principal causes of uterine and ovarian displacements are such as affect the static relations of the viscera of the abdomen as well as those of the pelvis; and hence the rational treatment of pelvic displacements requires the removal of all causes of displacement of the abdominal as well as of the pelvic viscera, and the restoration of the normal supports of these organs.*

During the twenty years that I have been engaged in the study and practice

* Presented at the International Congress of Gynecology and Obstetrics at Brussels, Belgium, September, 1892.

of medicine, my attention has been constantly called to the utility of exercise in the treatment of diseases peculiar to women, and my medical work has fallen in such lines as have given me an oppor-

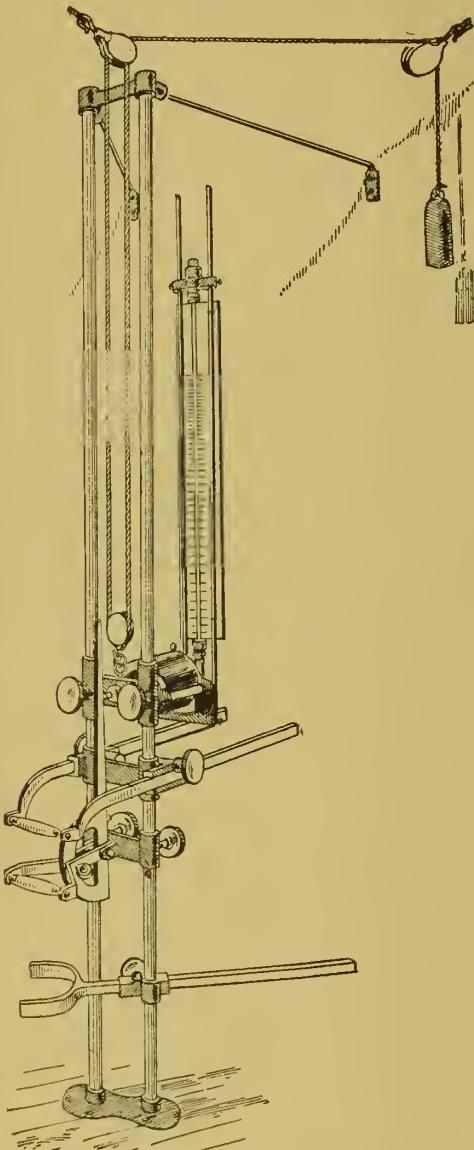


Fig. 1.—A Dynamometer adapted to testing the strength o
the muscles of the human body.

tunity to make a special study of this subject from a practical point of view.

A Graphic Study of the Proportionate Strength of the Trunk and the Extremities.—Nearly ten years ago I constructed a dynamometer (Fig. 1), by means of which the energy exerted by any group of muscles in the body

might be determined. The apparatus consists of a vertical rod, or rods, upon which moves a carriage bearing handle and levers, to which the various parts of the body to be tested are connected, and two cylinders, in one of which moves a piston to which the power is applied. A second cylinder is connected to the first, and receives at its upper end a glass tube which reaches to the bottom of the cylinder. The first cylinder is filled with oil; the second cylinder contains mercury, water, and oil. The difference in specific gravity of the three liquids keeps the mercury at the bottom, the water next above it, and the oil uppermost. When the piston is pressed upon, a portion of the oil is displaced from the first cylinder into the second, and as both cylinders are completely filled (care being taken to remove every particle of air), the mercury in the second cylinder is forced up into the vertical glass tube, the upper end of which is closed. A scale placed behind the tube enables one to read by the height of the column of mercury, the amount of power applied, or its equivalent in pounds or kilograms.

The data obtained by means of this apparatus has rendered possible the construction of a chart upon which may be made a graphic representation of the condition of a person's muscular system. The chart or table referred to consists of a tabulated arrangement of the averages obtained by measuring the strength of each of the principal groups of muscles of the body in a hundred adult women in ordinary health. In making a graphic representation of a person's strength, it is only necessary to place a dot at each of the numbers on the chart corresponding to the results obtained by testing with the dynamometer, and then to connect these points with a continuous line. The chart of an ideally symmetrical person would exhibit a straight line running horizontally across the sheet. Such a person is never found in practice, but the greater the deviations of the line, the greater is the asymmetry of the individual examined.

By the aid of the assistants whom I have trained for the work, I have constructed charts for several hundred persons of each sex, and in a comparative study of them have noted many interesting facts. The following table represents the strength of various groups of muscles

TABLE OF STRENGTH MEASUREMENTS.

arranged from the measurements of 100 adult women, taken and compiled under the direction of J. H. KELLOGG, M. D., Battle Creek, Mich.

EXCEPT WHEN OTHERWISE INDICATED, QUANTITIES ARE EXPRESSED IN POUNDS AVOIRDUPOIS

TABLE OF STRENGTH MEASUREMENTS.

Arranged from the Measurements of 100 Adult WOMEN, taken and compiled under the direction of J. H. KELLOGG, M. D., Battle Creek, Mich.

EXCEPT WHEN OTHERWISE INDICATED, QUANTITIES ARE EXPRESSED IN POUNDS AVOIDDUPOLS.

PER CENT.	WEIGHT (pounds).	ARMS.		LEGS.		TRUNK.		RESPIRATION.		TOTAL STRENGTH.	
		ARMS	LEGS	TRUNK.	LEGS.	TRUNK.	LEGS.	TRUNK.	ENTIRE BODY.	PER CENT.	
1	68.5175	112.110	25.25	60.55	72	65.60	50	60	55.60	58	90
2.5	68.0168	110.107	28.24	55.53	58	57.47	41	52	61.52	55	86
6	67.1159	102	92.23	21.48	49	61.51	40	38	48	49	82
10	66.0148	88	79.19	48.43	48	46.35	33	44	42.48	42	77
15	65.4141	81	74.18	35.39	45	42.35	32	42	38.41	40	73
20	64.8135	76	70	25.536	42	39.30	30	39	34.38	35	63
25	64.4131	72	76	16.43	34	40	36	28	36	37.36	64
30	63.9127	68	63	15.14	32.32	37	33	27	32	35.34	59
35	63.7123	65	61	14.8	30.31	35	31	25	31	28.33	59
40	63.3122	62	58	13.12	28.23	32	29	24	24	26.31	50
45	63.1120	59	56	12.11	27.27	31	28	23	23	26.30	50
50	62.8117	56	53	11.10	26.26	29	26	20	20	24	46
45	62.6114	53	50	9.8	24.24	26	24	19	22	20	37.25
40	62.4112	51	48	8.7	23.23	25	23	17	16	20	39.24
35	62.1109	47	44	7.7	23.21	23	22	16.15	18	16.24	22
30	62.0107	45	42	7.6	20.32	20	14	14	13	15.23	21
25	61.7104	41	38	6.5	20.18	21	18.12	11	14	13.22	19
20	61.4102	38	34	5.5	19.17	19	17.11	10	12	12.20	18
15	61.2100	33	30	5.5	18.16	18	15.9	11	10	15.21	19
10	60.798	29	27	4.4	16.15	16	14.8	10	10	15.14	14
5	59.796	25	23	3.3	14.12	15	10.5	6	7	9.9	18
2.5	58.689	23	20	2.2	21.01	10	9	5.5	5	5.5	12
1	58.079	20	20	2.1	20.10	8	5.5	5	10	5	10

when compared with the weight of the body in both men and women, the weight of the body being considered as unity : —

	Man.	Woman.
The grasp of the hand.....	7	.5
Total strength of legs.....	13.	9.4
Total strength of arms.....	8.	4.6
Total strength of trunk.....	8.	5.
Total strength of all the muscles of the body.....	30.	19.

Several facts of interest will be noted in the above comparative table. The total strength of the arm muscles in man is nearly two thirds that of the leg muscles, while in women it is only one half.

In both men and women the total strength of the arms is practically the same as that of the trunk and chest, the cause of which is readily understood when it is remembered that the vigorous use of the arm muscles requires fixation of the shoulders by contraction of the trunkal muscles.

Charts I and II are fair examples of the muscular type characteristic of women suffering from pelvic displacements. The low level of the figures indicating the strength of the anterior, posterior, and lateral muscles of the trunk, is a clear evidence of the feebleness of the development of the structures.

The only exceptions to this type found are those in which the displacement is clearly due to inflammatory processes or accidents at childbirth. In one hundred cases of pelvic visceral displacement taken without selection, I found the average total strength of the entire body to be 24 per cent less than that of the average woman, while the total strength of the trunk muscles in the same person was 35 per cent less than the average. These figures are simply the numerical expression of the same fact which is graphically shown in Charts I and II.

In Chart II the total strength is above the average which is found in the middle line of the chart. This unusual circumstance was due to the fact that the person was a teacher of gymnastics, who had by her exercise acquired a considerable degree of strength, although her crippled condition, due to the wearing of the ordinary dress, had prevented proper development of the muscles of the trunk. The weakness of the legs shown in Chart I was due to the fact that the patient in addition to a complete retroversion, had

been obliged to keep her bed for a considerable portion of the time for a number of months, owing to the inflammatory disease of the ovaries. In the great majority of cases the anterior trunk muscles are found to be disproportionately weak as compared with the posterior muscles, as is seen in Chart I, in which, however, this characteristic is not so marked as in a large proportion of cases.

Every experienced gynecologist must have noted the frequent association of pelvic diseases with changes in the external conformation of the body. The employment of various forms of abdominal supports in the treatment of uterine displacements, is a recognition of the relation between abnormal static conditions of the abdominal viscera, and a similar condition of the viscera of the pelvis.

(To be continued.)

Addisonian Intoxication.—Dr. Chauffard has recently contributed an interesting paper to *La Semaine Médicale*, devoted to the consideration of the pathological condition which exists in Addison's disease. The writer notes the experiments of Abelous and Langlois in support of the view that the peculiar phenomena which occur in Addison's disease are due to the accumulation within the body of certain poisons which it is the duty of the supra-renal capsules to destroy. This is made clear by the following facts developed by the experiments referred to : —

A frog deprived of its supra-renal capsule dies in forty-eight hours in the summer time, and in from twelve to thirteen days when in a state of hibernation, the length of the survival after the operation being directly proportioned to the activity of the animal.

When one capsule, or even a considerable fragment of a capsule, is left in place, the animal survives.

If after the destruction of both capsules a fragment of the kidney of another frog with the corresponding capsule attached in its normal condition, is inserted in the dorsal lymphatic sac, the life of the animal is prolonged to five or six days in the summer time.

The blood of a frog paralyzed and dying as the result of the removal of the capsules, is toxic to a frog recently operated upon, producing rapid paralysis and death.

TRANSLATIONS AND ABSTRACTS

[THE articles in this department are prepared expressly for this journal.]

THE RELATION OF NERVOUS EXHAUSTION TO FEVER.

THE eminent Dr. Bouchard, of Paris, recently contributed to the *Medical Week* (April 6, 1894) an interesting article upon the relation of nervous exhaustion to fever, from which we condense the following interesting facts:—

1. It is well known that fever patients often show a decided rise of temperature on moving to a hospital after a visit with friends, as a result of the use of improper food, and from muscular exertion, the temperature often rising after so slight an exertion as that of getting out of bed for the first time, subsequent to the establishment of convalescence. Even slight mental disturbance may be sufficient to cause a rise of temperature. These causes are insufficient to produce fever in a healthy person, but are sufficient to produce a rise of temperature in a feeble patient, for the reason that the nervous system of a subject of fever is especially susceptible to disturbance.

The temperature of the body under normal conditions is not as constant as that of a thermostat, but has the advantage over the thermostat in that it is capable of cooling itself off by increasing the loss of heat when it gets too warm, and when it becomes too cool, or is even threatened with chill, it checks the waste of heat at the same time that it increases the production. These changes are brought about not only before the body has suffered any change of temperature, but when a change is merely threatened by a change of temperature in the surrounding medium which might affect the body, by either increasing or diminishing its temperature,—in other words, the thermic regulation of the body is not only curative, like that of the thermostat, but it is also preventive. The preventive action is due to the reflex action set up by the impressions made by heat and cold upon the nerves of the skin. These impressions lead us voluntarily to modify our clothing, increasing or decreasing it, as

the need may be, while at the same time the skin sets up an automatic process by means of which the necessary regulation is effected.

The application of cold to the surface increases the production of CO₂, as well as the formation of urea. Severe cold causes shivering, a muscular tremor by which heat production is still further increased. At the same time, external cold causes contraction of the blood vessels of the surface, thereby diminishing the circulation of the blood through the skin, and lessening the rate at which the blood is cooled off. Perspiration is also diminished through the diminution of the blood supply to the glands of the skin, and thus the cooling influence of evaporation is lessened.

The most important means of cooling the body are evaporation upon the skin and the absorption of heat from the pulmonary mucous membrane. If the surrounding air is moist as well as warm, or if the skin is exposed to contact with water, as in a bath, evaporation cannot take place, and the most important means of increasing heat loss is inactive; hence the skin reflexes are much better adapted to protect us against abnormal cold than against an unnatural degree of heat. This may be due to the fact that we are more likely to be exposed by conditions existing in nature to an abnormal degree of cold than to an unnatural degree of heat.

Charles Richet has shown that chills and muscular tremor occur when the internal temperature falls to 34° C. (93.2° F.). A chill thus produced is due to the cooling of the blood which comes in contact with the nerve centers. Increase of the temperature of the heat centers increases the heart's action, even to 200 beats per minute. Respiration is increased (thermic dyspnoea, according to Fick, or temperature moderating dyspnœa, according to Lorain). Another result is immediate, profuse perspiration.

Bouchard found by experiments that perspiration appeared during moderate exercise when the rectal temperature reached 37.6° C. (99.7° F.). The result was the same, whether the temperature of the air was 15° C. (59° F.) or 26° C. (79° F.). When the temperature of the air was 59° F., perspiration began after 19 minutes, and when it was 79° F., perspiration began after 8 minutes.

Lowering the central temperature 3° C. (5.4° F.) induces a warning chill. Raising the internal temperature 0.4° C. (0.7° F.) produces cooling perspiration. Thus the skin reflexes protect better against external cold than against external heat, while the temperature of the nerve centers protects more perfectly against internal heat than against internal cold.

It is evident that this wise arrangement of nature is due to the fact that there is far greater danger from internal heat than internal cold, while the reverse condition exists with reference to external variations in temperature. In disease, morbid poisons very frequently prevent diaphoresis, even when both the internal and the external temperature is high. The antagonistic poison may antidote the tissue poison and establish diaphoresis, as in the use of antipyrin.

The body is much better able to prevent the disturbance of the normal temperature than to restore the normal temperature when it is once disturbed. Chossat has shown that in cases of inanition the temperature remains nearly normal until the last day, when it quickly falls 2.5° C. (4.5° F.), and at the moment of death falls more than 24° F. Bernard showed that the temperature of animals in an over-heated medium remained constant at 40° or 41° C. for a long time after reaching this point, then very suddenly the resistance of the body seemed to be overcome, and the temperature rose to 45° C. (81° F.), when the animal died.

The nervous system resists the causes of hyperthermia a longer or shorter time, according to the amount of energy it may possess at the time. When persons are exhausted by disease or otherwise enfeebled, fever occurs in consequence of causes which, in a healthy subject, would not produce any change in temperature, although they might increase heat production. This explains why in typhoid fever at the period of decline the same cause may produce either syncope or fever. As the appetite comes, and the patient gains strength, these causes act with less intensity. It is for the same reason that the diurnal temperature oscillations are slight in strong men and very marked in feeble persons.

Liebermeister shows that a difference in temperature amounting to several

tenths of a degree may result from simply changing from a reclining to a sitting or upright position, in cases of patients convalescing from typhoid fever. The same is true also in consumptives. These fluctuations of temperature are frequently erroneously attributed to pathological causes, rather than to any muscular effort.

The influence of muscular exercise upon temperature, as demonstrated by J. Davy, is a well-established fact in physiology. Obernier found the temperature 39.6° C. (103.3° F.) after an hour's running. Bouchard found the same result after 45 minutes' exercise. Fovel noticed a difference of 2.4° F., and Bergmann observed an elevation of temperature in a dog as the result of running, to the extent of 3° F. Bouchard found the average elevation of rectal temperature in a healthy man exercising immediately after rising in the morning, every day for a number of days in succession, to be 1.8° F. The rise was rapid at the beginning, but slower after perspiration began. At the end of half an hour the temperature remained stationary, the heat being dissipated as rapidly as formed. After a short but very energetic effort, the temperature continued to rise for ten to fifteen minutes after the effort ceased. Usually the temperature began to fall sixteen to twenty-two minutes after the cessation of work, when moderate exercise was taken. After one or two hours' rest in a horizontal position, the temperature reached the normal point, sometimes falling two-tenths of a degree Fahrenheit below normal, then again it rose slightly above, thus oscillating a few times, simultaneous oscillations of the pulse and respiration being also observed.

The ordinary difference between the temperature of the groin and the rectal temperature is 1° F. When perspiration has been induced by exercise, the difference in temperature is 2° F.

The activity of the digestive, salivary, and hepatic glands is a source of heat. In health there is no marked elevation after eating. After over-eating, and in cases of slow digestion, there is elevation of temperature, either as the result of increased glandular activity, or from the absorption of the products of indigestion, "the fever of dyspeptics." In such cases the temperature sometimes rises to 39.4° C. (103° F.). As the meals occur

regularly, fever in such cases is periodical, and sometimes is erroneously treated by quinine.

Intellectual labor increases the temperature of the nervous system, but it has not been demonstrated that general elevation of the temperature of the body occurs from this cause. The aggregate mass of muscles is twenty four times greater than that of the brain; hence when heated by labor, they heat the entire body. Five minutes' work raises the temperature of a muscle 1° C. (1.8° F.), but the temperature of the brain does not rise one degree, even after an hour's work. The capacity of the muscles is twenty-four times that of the brain; hence when the muscles are heated by work, the temperature of the entire body rises.

When the temperature rises even to 0.4° C. (0.7° F.), perspiration sets in, as previously shown. Perspiration, as the result of intellectual work, is very unusual.

In cases of disease, elevation of temperature resulting from intellectual work is a common occurrence. Talking, reading, or attention to business may cause recurrence of fever. Violent emotion of any sort in a debilitated subject will cause access of fever.

Bouchard states that in treating typhoid fever he has administered 60,000 cold baths, beginning the bath at a temperature of 2° C. (3.6° F.) lower than the rectal temperature, and cooling the bath 1° C. (1.8° F.) every ten minutes, until the temperature of the bath falls to 30° C. (86° F.). The result of a bath thus administered is a decline of temperature one half degree to one degree, and sometimes more.

Bodily temperature falls, in a cold bath, from half a degree to three degrees; sometimes the temperature rises. These cases are usually women who resist the treatment, the resistance being the cause of the rise of temperature.

Under the influence of disease and nervous weakness the system to some degree loses its power to maintain the regular temperature, so that conditions which produce effects so slight as to be unnoticed in a normal state, are observed by the aid of a magnifying lens, as it were. A weak nervous system is an extremely sensitive reagent for fever-producing causes.

TREATMENT OF TYPHOID FEVER WITHOUT ALCOHOL.

PROF. J. BURNETT YEO, of London, read a paper at the late International Medical Congress held at Rome, in which he strongly condemned the use of alcoholic stimulants as well as all other so-called antipyretic agents. We quote the following summary of this paper from the *Medical Week* :—

"Scientific and rational medicine requires that our therapeutic ideas should be in accord with our pathological knowledge, and the modern changes in our beliefs as to the nature and causes of the phenomena of specific fevers require a corresponding modification in the therapeutic conceptions and indications applied in their treatment.

"For the present I shall deal with enteric fever, taken, for this purpose, as a type of specific infective fevers.

"It is admitted that infective fevers are of bacterial origin, and their characteristic symptoms, of which pyrexia is one, are excited by pyrogenic and other toxins, developed by specific micro-organisms in the blood and tissues.

"Certain substances, outside the body, will arrest the growth or put a stop to the activities of such micro-organisms; while other conditions, as the presence of putrefactive processes, on the other hand, stimulate their growth and activities.

"We also possess agents capable of exercising some control over the pyrogenic and other toxic effects of those micro-organisms within the body. It is, therefore, an essential therapeutic indication in the treatment of these diseases to endeavor to antagonize the pyrogenic and other poisons secreted or produced by this invading microbe. This is the 'antitoxic' or 'antiseptic' idea as applied to the treatment of fevers.

"The research for direct antagonists to the activities of infective microbes is of even greater practical interest in the treatment of diseases like typhoid fever, than attempts in the direction of producing immunity. Clinical observations show that the average course and character of those fevers can be favorably modified, and to some extent controlled, by such antagonistic agents.

"I have myself made numerous observations in this direction; and remarkable corroborative testimony in favor of my method has been borne by other independent observers, and notably by Dr. O'Connor of Buenos Ayres, who states that he has applied it in the treatment of 100 consecutive cases of typhoid fever and has had only two deaths.

"In order to maintain the intestinal antisepsis which forms an essential part of this method of treatment, I insist on the necessity of scrupulous attention and caution in feeding patients suffering from enteric fever, great danger arising from a failure to note the extremely limited digestive and absorptive capacity exhibited by such patients.

"In conclusion, the use of alcoholic stimulants and the common employment of depressing antipyretic agents must be condemned, while the cold-bath treatment is extremely limited in its applicability and notably inconvenient.

"The application of the treatment as early as possible in each case is of the utmost importance, as the wide diffusion throughout the organism of the pyrogenic toxin and its morbid action on highly sensitive tissues, when not early antagonized, may reach a degree which renders recovery impossible."

This notable utterance by a man of eminence, upon the use of alcohol in typhoid fever, is well worthy of careful consideration by intelligent physicians. Medical men of sound sense and extensive experience are speaking out upon this important question in all parts of the world.

SHREWD OBSERVATION.

NOTHING is more essential to success in the practice of medicine than exactness and shrewdness in the observation of symptoms. Dr. Milner Fothergill told the following story, which illustrates this fact; it also explains the secret of the success of the most successful charlatans:—

"In the town of Leeds there once lived a quack who had received no professional instruction whatever, but was known far and wide for his wonderful cures, and especially for his power of diagnosing the diseases of patients whom he had never seen, by simply examining

their urine. A celebrated surgeon, Mr. X., wishing to see his method of working, desired to be present one day, and the quack readily acceded to his request, feeling much flattered that so great a man should patronize him.

"Shortly after Mr. X. had taken his seat, a woman came in with a bottle of urine, which she handed to the quack. He looked at her and then at the bottle, held it up between him and the light, shook it, and said: 'Your husband's?' 'Yes, sir.' 'He is a good deal older than you?' 'Yes, sir.' 'He is a tailor?' 'Yes, sir.' 'He lives at S.?' 'Yes, sir.' 'His bowels are obstinate?' 'Yes, sir.' 'Here,' he said, handing her a box of pills, 'tell him to take one of these pills every night for a week and a big drink of cold water every morning, and he will soon be all right.'

"No sooner had the woman gone than Mr. X. turned to the quack, curious to know how he had made out all this. 'Well, you see,' said the quack, 'she was a young woman, and looked well and strong, and I guessed the water was not hers. I saw she had a wedding ring on her finger, so I knew she was married, and I thought the chances were it was her husband's water. If he had been about the same age as she, it was hardly likely that he was going to be ill either, so I guessed he was older. I knew he was a tailor because the bottle was stopped, not with a cork, but with a bit of paper rolled up and tied round with a thread in a way that no one but a tailor could have done. Tailors get no exercise, and consequently they all are very apt to be constipated. I was quite sure he would be no exception to the rule, and so I gave him opening pills.'

"'But how did you know that she came from S.?' 'Oh, Mr. X., have you lived so long in Leeds, and don't know the color of S. clay? It was the first thing I saw on her boots, the moment she came in.'"

The story of Zadig, as told by Prof. Huxley, is, perhaps, a still better illustration of the rapidity of precision and minuteness in observation:—

"Zadig was a young man who, disgusted with life, retired from Babylon to a lonely place on the banks of the Euphrates, and there studied animals and plants until he saw a thousand differences where others could see only uniformity.

One day one of the queen's eunuchs, followed by a band of officials, came hastening past, and asked Zadig, 'Have you seen the queen's dog?' Zadig modestly answered, 'A bitch, I think, not a dog.' 'Quite right,' said the eunuch, and Zadig continued, 'A very small spaniel, has lately had puppies, limps with the left fore foot, and has very long ears.' 'You have seen her, then,' said the eunuch. 'No,' said Zadig; 'I have never seen her, and did not even know that the queen had a dog at all.'

"At the same time the finest horse in the king's stable ran away, and the chief huntsman, in seeking it, also made inquiries of Zadig, who said, 'A first-rate galloper, five feet high, small hooved, tail three feet and a half long, cheek-pieces of the bit are of twenty-three carat gold, and the shoes silver.' 'Where is he?' cried the chief huntsman. 'I have not seen him, and never heard of him before,' said Zadig.

"Naturally enough he was suspected of having stolen both the spaniel and the horse, was tried and condemned; but no sooner was sentence pronounced than both the missing animals were found. Zadig was then asked to explain how he knew so much about them without having seen them, and this he said was the way: He noticed one day in the sand the tracks of an animal which he easily recognized as those of a small dog. Long, faint streaks on the ridges of the sand between the foot-prints indicated that it was a bitch with pendent dugs, showing that she had had puppies shortly before. Other marks on the surface of the sand close to the prints of the fore feet indicated that she had very long ears, and one of the foot-prints being fainter than the others showed that she was slightly lame. As for the horse, the marks of the hoofs were all equidistant, showing that he was a famous galloper. In a narrow alley the dust on the trunks of the trees was distributed at three feet and a half from the middle of the path; this showed the length of his tail, which had swept the trees as he lashed it from side to side. Branches of trees met over head at a height of five feet, and under them were some newly fallen leaves, showing that the horse had brushed against them and was therefore five feet high. As to his bit he had rubbed it against a stone which Zadig recognized as a touchstone, and his shoes

had left such marks upon pebbles of another kind as showed that they were made of fine silver."

DIAGNOSTIC POINTS RELATING TO ASCITES.

PROF. LITTEN, of Berlin (*Medical Week*), thus summarizes the chief points in the differential diagnosis of ascites:—

"The characteristic symptoms of ascites are the following: Special configuration of the abdomen, curvature of the line limiting the dullness of sound with the concavity turned upward, fluctuation, variability of the dullness according to the patient's position, dilatation of the chest, projection of the umbilicus, separation of the rectus abdominis muscles, etc.

"If the ascites is due to compression of the inferior vena cava, there is œdema of the abdominal parietes and genital organs, pointing then to an affection of the respiratory or circulatory organs.

"If, on the other hand, the ascites is the result of compression of the portal vein, the œdema mentioned above does not exist; but around the umbilicus is found a circle of dilated veins, known as the 'head of Medusa.' When these conditions exist, they indicate an affection of the liver, kidneys, or peritoneum.

"Generally, it is supposed that in a case of tuberculosis or carcinoma, the extravasation is sanguinolent; but this is only true in a small number of cases. Ordinarily the extravasation in tuberculosis or carcinoma of the peritoneum is of a serous nature.

"Fibrinous peritonitis, which is a far more frequent affection than is generally admitted, also gives rise to ascites. I remember having under my care a little girl, five years old, affected with ascites, the cause of which could not be determined. The child was punctured eight different times, the ascites being continually reproduced; but at the present time her health is excellent.

"Is it possible to confound ascites with other morbid processes?—There is no doubt of that. Andrée thought he had to do with ascitic extravasation in a case where the stomach was dilated to such an extent that it bulged out in the vagina. For my own part, I have made a similar mistake in examining a woman at the point of death, whose stomach was so

much dilated that, by changing the patient's position, the same modifications were produced in the percussion sounds as are characteristic of an ascitic effusion.

"There are also cases of intestinal distension which may be taken for ascites, an error committed by Frerichs.

"Still more frequently there may be confusion between ascites and unilocular ovarian cysts. I recall having seen, in 1876, a woman who presented all the symptoms of ascites, although there was no perceptible cause for this disease. Schröder, who examined the same patient, also concluded that it was a case of ascites; but on making an exploratory puncture, he found that we had to do with a cyst. I have known several instances of the same kind, and whenever one meets, in a woman, with what appears to be an ascites, the cause of which is at all obscure, he ought always to think of the possibility of its proving to be an ovarian cyst.

"There exists a symptom which is of considerable assistance in arriving at a correct diagnosis: In a true case of ascites, the fluctuation can generally be perceived in the vagina, whereas never anything of the kind occurs in cysts.

"The examination of the liquid should also be resorted to for diagnostical purposes. If this liquid becomes blue in the open air, it is the product of ascites; but when the liquid, on being left to stand, immediately coagulates, it indicates a dermoid cyst.

"Neither should the chemical examination be neglected, for if the liquid contains paralbumen, there need be no hesitation in diagnosing an ovarian cyst.

"One symptom which never deceives, is brought out by the examination of the liquid by means of the 'centrifugal' apparatus. If you have to do with a liquid of ascitic origin, you always obtain a bloody spot resembling sealing wax, such liquid always containing a tinge of blood. On the other hand, I have never seen a red spot in the case of an ovarian liquid. As many times as I have repeated this experiment, it has never failed me.

"Now and then ascites exists conjointly with a cystic affection, particularly when the ovaries are the seat of papillomatous degeneration.

"Exploratory puncture of cysts some-

times results in making the radical operation more difficult. It is, therefore, well to abstain from this procedure, and to resort at once to laparotomy."

Successful Lithotomy.—Briggs reports 171 operations by the mediobilateral method, a modification of the median operation suggested by Civiale in 1829, with only four deaths, three of which were attributable to the operation. This is a record hard to beat.

Vaginal Castration.—Dr. Jacobs, of Brussels, reports 179 recoveries in 184 cases of purulent or chronic bilateral annexitis. He argues that this death-rate proves the danger of castration by the vaginal method to be less than by abdominal section, since this mortality is only 2.71 per cent, and the combined statistics of Richelot, Doyen, Péan, Ségond, Röuffart, and himself is 4.49 per cent in 690 cases, whereas the mortality of Terrier, Terrillon, Martin, Lawson Tait, and several other prominent operators amounting to 1540 cases in all, is 5.7 per cent.

In the cases of vaginal castration the uterus as well as the ovaries was removed. Another advantage claimed for this method is that the complications which sometimes follow removal of the appendages by the abdominal method, leaving the uterus behind, are almost altogether absent when the uterus as well as the ovaries is removed.

The Cold Bath the Best Antipyretic.—Numerous experiments have shown beyond room for doubt that heat production of thermogenesis chiefly takes place in the muscles. Heat production is of course most active during exercise, but is continually in progress under the control of the thermic centers of the brain and spinal cord. The fact that an application of cold to the surface reflexly induces an increased thermogenesis has been used as an argument against the cold bath as an antipyretic, but Mac Alister's experiments show clearly that the prolonged application of cold to the tissues inhibits heat production by cooling the muscles, while it at the same time abstracts heat.

BACTERIOLOGICAL NOTES.

[THE notes appearing in this department are abstracts or translations prepared expressly for MODERN MEDICINE AND BACTERIOLOGICAL REVIEW, from original sources.]

Bacteria in Eggs.—Dr. Charles T. Mc Clintock, of the University of Michigan, details the following experiments which indicate that eggs become infected with microbes in many cases at least before they are laid. This fact emphasizes the importance of securing for our fowls as well as other food-producing animals, healthful conditions of life.

A healthy, laying hen was obtained, and after repeated washings in a solution of bichloride of mercury, followed by sterile water, she was placed in a sterilized cage. The hen continued to lay regularly every other day. The eggs were obtained as soon as possible after being laid, and a portion of them were placed in sterilized cotton and then in an incubator. If my memory is not at fault, all of those eggs decayed and swarmed with bacteria.

The remaining eggs were taken as soon as laid, and cultures were made from their contents. Some of these culture tubes developed; others remained sterile.

After some days the hen was killed, and with proper aseptic precautions culture tubes were inoculated from various portions of the oviduct. Most of these tubes developed. It would seem from this one case that the putrefactive bacteria entered the egg in its passage down the oviduct and before the shell was formed.

But to conclude that all eggs when laid contain putrefactive bacteria is not warranted. It is a matter of common household observation that a few eggs do not decay, no matter how long they may be kept, and the further fact that eggs packed in some dry material, as sawdust, salt, etc., and those greased or coated with gelatin, etc., keep longer than those left in the open air, would seem to indicate that the bacteria enter through the shell.

Typhoid Germs Carried on the Finger.—Uffelmann has reported some experiments which indicate that typhoid germs, and other pathogenic germs as well, may be carried from one person to another by neglecting to cleanse or disin-

fect the hands. The following is a brief statement of the experiment: Having moistened the finger with liquid containing cholera germs, the finger was allowed to dry, and was then rubbed on a piece of roast beef. Some time later a great quantity of cholera germs were found developed upon the beef. In the same way typhoid fever might be communicated to food, to drinking cups and other utensils, whence they might easily find their way into the alimentary canal of some human body. The *Sanitary Journal* reports the following circumstance, which seems to illustrate this method of communicating typhoid fever: "Several very rapidly fatal cases of typhoid fever followed a case in a family, the mother of which lacked a proper sense of cleanliness. After attending to the wants of her sick child, the next moment she employed her hands in preparing a meal for the well members of the family." Too much care cannot be taken in the disinfection of hands and in the observance of all the rules of cleanliness, in the most rigorous manner possible in the care of patients suffering from germ diseases of any sort.

Hæmato-Therapy for Syphilis.—Bonaduce has recently reported a case in which a characteristic chancre with enlarged inguinal glands disappeared after twelve injections of the blood serum taken from children suffering, presented all the characteristics of hereditary syphilis. The patient remained well eight months after the experiment.

Relation of Bacteria to Colds.—A Prof. Schenck, according to the London *Globe*, has recently discovered that what is commonly called a cold is due to bacteria. His theory is that when a person enters a cold room, the bacteria flock to his warm body, and find entrance through the open pores of the skin. We are surprised to find a paragraph going the rounds of the medical journals, calling attention to this remarkable discovery. The idea that bacteria are possessed of volitional power and capable of pouncing down upon the body like a flock of vultures to seek out the so-called pores of the skin like weasels, is too monstrous for credence by any one who has the slightest

familiarity with the facts of bacteriology. Nevertheless it is quite probable that a chronic cold, if not an acute one, is chiefly dependent upon the microbes which constantly flourish in the nasal cavities, and which find in the fluids poured out during an attack of coryza a most favorable culture medium. The opaque discharge which begins a day or two after a cold has been contracted, is found to be swarming, not only with microbes, but with leucocytes and epithelia which have been sacrificed in the effort to resist the invading germs.

Flies and Cholera.—Dr. J. G. Sawtchensko recently conducted a series of minute experiments, the result of which has been to demonstrate that the comma bacillus to which cholera is due, may be propagated and disseminated by means of flies, since the microbe when swallowed by a fly not only resists the action of the digestive fluids of the insect, but multiplies in its intestinal canal. This same fact has been observed as regards the vibrios of Metchnikoff, and in relation to both the ordinary small fly and the larger species. Grassi showed, long ago, that the eggs of certain parasites, particularly tapeworms and oxyuris, may pass through the intestinal canal of a fly, and may thus be brought in contact with the food. Dr. Joseph, of France, has observed the microbes which give rise to cholera nostras in the blue fly and in the golden fly (*Lucilia Cæsar*).

The immense importance of these facts is apparent when we consider the fact that a single microbe, when falling in a suitable medium, may give rise to an infinite number. These facts are sufficient to explain the observation frequently made in outbreaks of cholera, that the disease makes its appearance at many independent foci, and not infrequently it is utterly impossible to trace any direct connection between the early cases. This was notably the case in the last outbreak in New York City.

Microbicide Properties of Mucus.

—The presence of vast numbers of microbes in those cavities of the body which are in communication with the air would doubtless be the occasion for frequent and fatal attacks of illness were it not for the fact that the mucus which

covers these exposed surfaces is possessed of distinct bactericide properties. Even germs as virulent and tenacious of life as are the spores of anthrax, have been found to be killed after a few hours of exposure to nasal mucus. This product of gland-action is found to be capable of destroying all kinds of microbes. It is this protective action of mucus which prevents an enormous development of bacteria in the nose and other cavities of the body which are exposed to the air. This fact emphasizes the importance of preserving intact the much-neglected nasal mucous membrane, since it is evident that a state of disease capable of destroying the mucous glands, and hence vitiating the mucous secretion or causing its entire loss, must expose the body to attacks of disease from which it might otherwise escape.

Nuclein the Germicidal Constituent of Blood.—Prof. V. C. Vaughan, Dean of the Medical Department of the University of Michigan, has recently announced the discovery that nuclein is one of the constituents of the serum of the blood, and that this nuclein is possessed of germicidal properties. It is supposed that nuclein may be utilized therapeutically for increasing the germicidal properties of the blood, and thus combat certain forms of disease due to microbes. It has been suggested, for example, that a quantity of nuclein may be obtained from an animal which has been rendered immune to diphtheria or other germ diseases, and that the human body may be rendered proof against a given malady by the hypodermic injection of a proper quantity of the nuclein obtained as stated. There may possibly be a great future in store for nuclein as a therapeutic agent.

A New Test for Eberth's Bacillus.

—M. Wurtz (*Annales del'Institut Pasteur*) has discovered a simple method of distinguishing between *bacillus coli* and Eberth's bacillus, two species which are identical in their morphological characters. M. Wurtz found that they may be easily distinguished by making plate cultures upon gelatin containing two per cent of lactose and colored with an aqueous solution of tournesol. The *bacillus coli* produces a deep red color in the media around it, while Eberth's bacillus produces no change.

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MEDICINE IN THE SOUTH.

SOME time ago, in a paper read before a leading medical society, a gentleman whose name is well known in the United States represented the South and West as a sort of paradise for quacks. We fear our good friend has had the misfortune to reside so long in the East that he has lost touch with his Western and Southern brethren, and has failed to note the immense progress which has been made in the West as well as in the East, and the elevation of the standard of medical education and medical practice within the last decade. The world has long been disabused of the idea that Boston is the center of intelligence on the American continent. The great centers of population which have sprung up in the West have made, within the last quarter of a century, such rapid strides in culture that one can now find as dense a literary atmosphere in Chicago as in New York or Boston, and the same progress has been made in medicine as in other scientific professions. Chicago already nearly equals New York in population, and has an equal number of excellent medical schools. The University of Michigan has a medical department which stands on a level with the very best institutions of the sort in this country, a fact which is perhaps better recognized in England and on the continent of Europe than in the United States.

In a recent visit to the South we were astonished to find Louisville, Ky., one of the greatest medical centers in the world. We were more than amazed to learn the fact that the six medical colleges of which that city boasts had an attendance, during the last winter, of 1700 students, a number which far surpasses the records of any other city, with the exception of New York, which is only slightly ahead. Louisville has long been famous as a medical center, but has only recently sprung into so great prominence as to place it so near the head of the list. The famous surgeon, Gross, the not less famous physician, Austin Flint, Sen., the world famed Yandell, now some years deceased,—these and many others whose names might be mentioned, began their medical career in Louisville, and seem to have left behind them a medical progeny scarcely, if at all, their inferior in natural gifts, and possessed of the greater attainments which are made possible by the modern facilities for education offered in the best medical schools of this country and Europe.

The opportunity of attending the recent meeting of the Kentucky State Medical Society, held at Shelbyville, Ky., afforded by the kind invitation of members of that society, and the duty placed upon us by the president of the Michigan State Medical Society to represent the society at that meeting, enable us to say, from personal observation, that there are few places in this or any other country where there could be gotten together a larger number of cultivated, intelligent, and progressive medical men than are represented at the meetings of this body.

The papers, and the discussions which followed them, were models of scientific research, lucidly presented. One of the most important subjects upon the program was that of "Appendicitis," a timely topic well worthy the attention it received. Several papers relating to this subject presented its different phases in a

most admirable and exhaustive manner, and constituted a most excellent epitome of the information possessed by the profession upon this subject at the present moment. The publication of these papers will be looked for with great interest, as they are worthy of careful study, and will unquestionably exercise a marked influence in moulding the opinion of the profession upon the several important questions which are involved in this subject.

Among other papers of great practical importance was an able paper by Dr. Dudley S. Reynolds, of Louisville, entitled, "Syphilitic Diseases of the Eyes." Dr. Reynolds, in his usual lucid and incisive manner, dealt with his subject in a wholly new and novel way, presenting opinions which were doubtless considered by the majority of members present as decidedly iconoclastic, but which, nevertheless, bore well the test of criticism, as they have already, in the hands of the author of the paper, borne the test of experience. Dr. Reynolds is unquestionably one of the most cultivated and experienced physicians in the South. In his specialties as an oculist, aurist, rhinologist, and laryngist he has perhaps no superior in the United States.

Another important paper which we should mention, was by Dr. Thomas Hunt Stucky, entitled, "Colonic Dyspepsia." The writer of this paper brought forward many new thoughts of a most important and practical character. The subject is one which has received altogether too little attention. The subject was ably presented, and in a most lucid manner. There are, in our opinion, few if any subjects of graver importance to the practitioner.

The writer had the pleasure of presenting an abstract of a paper entitled, "A New and Precise Method of Investigating Functional Disorders of Digestion, Based upon the Study of more than 3300 Stomach Fluids," and is indebted to the distin-

guished president of the society, Dr. John Q. A. Stewart, to the able secretary, Dr. Steele Bailey, and especially to Drs. Pratt, of Shelbyville, and Dudley Reynolds, of Louisville, for many courtesies and attentions which served to impress him with the belief that the typical medical gentleman, and the rising lights of the profession are to be found more numerous in the Blue-grass Region of Kentucky than in any other part of the world. Indeed, it does not seem so very strange that a region which produces the finest horses in the world should likewise produce a superior race of men, since we recall the anecdote of a Scotchman who called the eminent Dr. Johnson to account for writing in his dictionary as a definition for oatmeal: "A food for horses in England, and for men in Scotland." When the great lexicographer maintained that his definition was correct, the Scotchman retorted: "Aye, and where do you find such fine horses as in England, and such fine men as in Scotland?"

APPENDICITIS.

JUST at present the interest in both medical and surgical circles seems to center chiefly about the appendix vermiformis, that curious little structure which the Darwinists would have us believe is only useful to the human race as a reminder of its humble origin, having long since lost the useful office which it is said to have once served as a digestive organ when man was only an anthropoid mammal, and subsisted upon the coarse and undifferentiated products of the primeval forests. Whether or not the Darwinists are right in their theories relating to the origin of this troublesome little pouch, is a question we shall not just now undertake to discuss. The burning question of the day is, Under what circumstances we are to consider that tolerance of the mischief-making appendix has ceased to be a virtue. Upon

this subject all possible shades of opinion are expressed, together with an almost infinite variety of theories respecting the etiological factors which are active in developing the inherent mischief-making propensities of this functionless diverticulum.

A New York surgeon advances the theory that it is the duty of every surgeon to exercise himself to the extent of his ability in the interest of the evolution of an appendix-less race of human beings, which means, of course, war to the knife against the unruly member until the last member of the human family shall have undergone what might be termed a sort of biological circumcision, and have been thereby elevated to the high estate of completely evolved manhood.

Really, it seems to us that this is carrying things a little too far. Even if the surgeon be so skillful as to be able to perform the operation upon a subject through an inch and a half incision, and to get him out of bed in a week and a half, *à la* Dr. Morris, it must be admitted that the subjection of the whole human family to this operation would result in more deaths than ever have been caused by captured cherry pits or apple seeds.

Asepsis is a procedure, the value of which cannot be overestimated, nevertheless the comparative immunity from fatal consequences which it secures for nearly all surgical procedures involves an evil of no small proportion, the nature of which scarcely needs to be even hinted at, so notoriously common is the rashness, one might almost say criminal recklessness, manifested by many young surgeons, especially those whose educational opportunities have been limited, as shown in the undertaking of unnecessary operations or operative measures for which neither the patient nor the operator has been properly prepared. Common sense and sound judgment are quite as necessary as asepsis for scientific surgery. The sharper the tool, the more skilled must be the workman.

Another matter worth considering is the fact of our ignorance in relation to the functions of the appendix vermiciformis. The simple fact that we do not know the use of this organ is not sufficient evidence that it is useless. Only a few years back, we were in the same position in relation to the supra-renal capsules, the thyroid gland, the spleen, and other structures which recent researches have shown us to be of great functional importance to the vital economy. If the supra-renal capsules were as easy of access as the appendix vermiciformis, or the thyroid gland as readily removable, it is quite probable that before this time some thousands of people would have been deprived of these important blood-purifying glands. Without having any particular theory to advance, we feel strongly inclined to the opinion that the great amount of attention now being given to the appendix vermiciformis will, in the near future, develop the fact that this apparently useless organ is not merely a vestige which has been handed down by heredity from some bygone age when man lived neighbor to the megatherium and required a third stomach for the satisfactory performance of his digestive processes. Nature is a great economist, and quickly eliminates from her domain idle and useless organs, as well as useless and idle organisms. The appendix vermiciformis has been studied altogether from the negative side. It would be well, before we decide to wage an exterminating war against this little organ, to study this question from the positive side. Possibly the organ may be found to be worth preserving after all, when in health, and worthy of having a chance for its life when it gives evidence of disease.

The idea that the abdomen should be opened and the appendix removed upon the slightest indication of inflammatory disease in this region, is about as sensible a notion as that the same procedure

should be adopted under similar circumstances in relation to the ovaries or Fallopian tubes. An inflamed tube may result in suppuration, pyosalpinx, general peritonitis, and death. Probably more women have died from this cause than men from appendicitis. One attack of ovaritis or salpingitis is very likely indeed to be followed by another attack. The constantly recurring stimulus of the catamenia is an exciting cause of relapse, which is absent in appendicitis. The frequent recurrence of ovaritis or salpingitis is a proper indication for operation. A suppurative inflammation of an ovary or tube is certainly a justifiable indication for operative interference. The same must be said of appendicitis. It may be indeed that the suppurative inflammation of appendicitis involves more hazard than a similar condition of the tubes or ovaries, although it can hardly be said that the evidence is positive and clear upon this point. The question is one in which there is good chance for extreme views upon both sides, and hence it may be reasonably expected that salutary results will follow the very general discussion of this question which is now taking place, and that in the near future we shall be possessed of such facts and rules as regards indication as will guide the practitioner to a correct procedure in any given case, and will clearly define the respective duties of the physician and the surgeon in these cases.

Chemistry and Therapeutics. — In a recent editorial, the *Scientific American* pictures a glorious future for chemistry as a means of relieving human ills, basing its argument upon the recent discoveries in physiological chemistry, especially with reference to the relation of toxic products of microbian origin to diseased processes of various sorts. Our scientific contemporary formulates a general proposition in the following words :—

"A form of matter must be capable

of existence, and must, therefore, be within the power of chemical research to discover and prepare, which will possess any assignable or conceivable potency or influence over any given species of matter, dead or living."

To the well-trained physiologist the above proposition must appear in the highest degree absurd, since it ignores utterly the fact that there is a generic difference between living matter and dead matter. Chemistry is capable of producing an infinite number of variations in its compounds, but none of these variations can be such as to lift dead matter out of the chemical plane to the biological plane. It would be equally reasonable to suppose that the chimpanzee may be elevated to the level of humanity simply because heredity and environment are capable of producing an infinite number and kind of variations in this animal. After all the variations which can possibly occur through an infinite period of time, the chimpanzee will still be an ape, and not a man. Chemistry will never be able to produce food capable of sustaining human or animal life. Chemistry never has produced and never will produce any substance capable of reinforcing the vitality of the animal organism, either by replenishing its tissues or augmenting its forces. It is also futile to suppose that chemistry will ever furnish efficient antidotes for the toxines produced by the microbic causes of disease, or germicides capable of destroying microbes diffused through the system of an animal, without destroying the animal itself. Were man capable of accomplishing this, he might bid defiance to death as well as disease, barring accidents, since old age itself is doubtless due to the gradual deterioration of the body under the influence of poisonous substances generated by microbes within the alimentary canal. There is an infinitely wide chasm between chemistry and biology, and no amount of research will ever bridge the gulf.

How to Prepare Malted Milk.—The discovery was made a few years since that the extract of malt contains, in addition to the well-known starch digesting ferment which converts starch into maltose, a ferment capable of digesting albuminoid substances.

This ferment, known as peptose, acts upon albuminoids very slowly at ordinary or lower temperatures. It is destroyed at 175° F. It is analogous to the ferment found in pineapple juice.

The following is the method of preparing malted milk: To a pint of milk add one tablespoonful of malt. The milk may be heated to a temperature of 60° . After that it should be brought to a boiling point, and boiled for twenty or thirty minutes. This will check the further action of the malt. Milk thus treated does not form large, hard curds in the stomach, and agrees perfectly with many persons who cannot digest milk in its ordinary form. This method of peptonizing milk is much preferable to the old method, in which various preparations of pancreatin were employed. These animal substances not infrequently gave to milk a very unpleasant flavor and odor, and sometimes imparted to it poisonous substances.



New Method of Using Politzer's Bag.—When a student in Vienna, a considerable number of years ago, giving special attention to disease of the ear under the rival professors, Politzer and Gruber, no small amount of amusement was occasioned the students by the controversies which constantly arose between these two great aurists as regards the best method of inflating the tympanic cavity. Professor Politzer, the inventor of the useful little instrument consisting of a rubber bag for forcing air suddenly into the nasal cavity, and then through the Eustachian tubes, thus inflating the middle ear, insisted that the best method of using the bag, known by his name, was

by making the patient swallow water, the operator forcing the air out of the bag into the nasal cavity simultaneously with the act of swallowing. Gruber, on the other hand, insisted that the maneuver was best effected by making the patient utter certain syllables simultaneously with the compression of the bag.

In the practical use of the Politzer bag we soon found that in many cases the middle ear could be more easily inflated by making the patient blow at the same time the air was forced into the nasal cavity, the nostril being at the same time closed. Dr. Boydan, according to the *Medical Times and Hospital Gazette*, has recently perfected this method, which may be briefly stated as follows:—

Make the patient take a deep inspiration, then slowly blow the air out through a small opening between the closed lips. So long as the patient blows, the soft palate remains in contact with the posterior wall of the pharynx, thus closing the posterior opening of the nasal cavity and facilitating the inflation of the tympanic cavity. One of the conveniences of this method is that several inflations can be made while the patient continues to blow; whereas, when the patient is made to swallow water, a new supply of water must be given with each attempt.

We have tried this method, and find it satisfactory.



Mental Projection of Images.—Nikola Tesla, the Hungarian electrician, has suggested that since images are recognized in the brain through the medium of the retina and the optic nerve, it may be possible for the brain to evolve an image upon the retina by a sort of reflex action when the mental picture is formed in the mind. The further suggestion is made that possibly some means may at some time be obtained by which this image upon the retina may be recognized, thus perfecting a process by which true mind-reading may be effected.

Craig Colony for Epileptics.—We learn by special circular that the Legislature of the State of New York has recently passed a bill establishing a colony of epileptics in that State. The bill provides for the purchase of a fine tract of land comprising three square miles in the Genesee Valley, near Mount Morris. It is traversed by brooks and divided into fine fields, woodlands, and orchards. It was for twenty or thirty years a Shaker colony, and is well adapted to the use to which it is to be put. A medical superintendent, steward, matron, pathologist, nurses, school-teachers, teachers of the various arts and industries, and all other officers needed, are to be appointed as required. Facilities will be afforded for the care of from 1500 to 2000 persons. The enterprise is expected, sooner or later, to become self-supporting.

REVIEWS.

The Nature of Fever.—By T. K. Holmes, M. D., Chatham, Ont.

After presenting in a very lucid manner the modern theories relating to heat production and regulation, the author calls attention to the fact that a thermometer is not always a true criterion in relation to the intensity of a febrile action. He remarks, "Paradoxical as it may seem, there may be a rise of temperature without fever, and there may be fever without rise of temperature."

One of the most valuable features of the paper is the statistics quoted. Dr. Mc Keough, partner of the author, is stated to have treated one hundred cases of typhoid fever by the cold bath with a mortality of only two per cent. The author gives several cases treated by himself in which the great value of the cold bath is clearly shown. In one case the patient had a temperature of a 106° , and was somewhat comatose. The patient was placed in a cold bath until the temperature fell to 100° . The coma and

stertorous breathing disappeared; the cold bathing being continued, the patient made a good recovery. The author has also found the cold bath an admirable remedy in acute diarrhoea attended by a high rectal temperature. Cold baths are also recommended in acute bronchitis and lobular pneumonia in children, also in acute dysentery and high fever. This paper is valuable, not only because of the useful clinical facts which it presents, but as an illustration of the rational method of dealing with disease by bringing to the bedside the results of the researches carried on in the physiological laboratory.

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A New Milk or Water Sterilizer.—
By C. A. Cary, Auburn, Ala.

In this little paper the author illustrates a very convenient milk sterilizer. Its form is slightly different from, but in principle it is apparently the same as, the milk sterilizer described in these pages some time ago, furnished by the Sanitary Supply Co., Battle Creek, Mich. The observations made by the author in relation to the sterilization of milk, are very excellent, and in line with the most recent knowledge upon this subject. We may add that if milk is to be kept a long time, it is safer to boil the bottles in a saturated salt solution, so as to raise the temperature to about 220° , which secures the thorough destruction of all microbes.

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A Simple Means of Increasing the Aperture and Improving the Performance of Some Immersion Lenses.—
By Henry G. Piffard, A. M., M. D., New York City.

Dr. Piffard's expert and extensive experience in the use of microscopic lenses long ago made him an authority in matters of this sort. The ingenious method proposed for improving the performance of adjustable and immersion lenses by means of mono-bromide of naphthalin, will be of great service to practical microscopists.

Tait's Perineal Flap Operation.— By F. Byron Robinson, B. S., M. D., Chicago, Ill.

This is a very concise little paper, describing Dr. Lawson Tait's method of operation upon the perineum. It is a vast improvement over Emmet's, Jenk's, or any other method previously employed. Dr. Robinson's description of the operation is very exact and lucid, and is made clear to the most obtuse understanding by several very good cuts. Dr. Robinson says he has seen Dr. Tait do the operation in five minutes. The writer has also seen him do it in three minutes by the watch, and has often himself done the operation in three minutes, and once in two and a half minutes. Five minutes is ample time for the operation. Four minutes is plenty long enough for an expert operator. The operation is equally well adapted for partial and complete laceration.

Pharyngo-Mycosis.— By Homer M. Thomas, A. M., M. D., Chicago, Ill.

This is a very interesting and suggestive paper, calling attention to a condition which has not often been recognized in the standard text-books treating of diseases of the nasal pharynx. The successful case reported shows the value of the author's methods of treatment.

Hysterectomy by Morcellement and the Vaginal Route in Pelvic Operations, in Place of Laparotomy or the Abdominal Method.— By Geo. J. Engelmann, M. D., St. Louis, Mo.

The method of operation which is described in this paper has been recently brought to notice chiefly through the efforts of Péan, Ségond, and Richelot of Paris, and Jacobs of Brussels. It seems to be little known in this country, and Dr. Engelmann has done the profession a favor by presenting a lucid description of the method above referred to. French literature, for the last two or three years,

has been filled with praise of this method, and the splendid statistics which are shown by men of the most thorough reliability indicate it to be a decided advance over the abdominal method, at least in a certain class of cases. Jacobs reports 200 cases, with a mortality of only three per cent. Péan reported, two years ago, sixty-six cases without a death. These results are certainly sufficient to call the attention of gynecological surgeons more forcibly to the value of this new method, and will doubtless lead to its adoption in this country. We are surprised to note that an American surgeon of some notoriety has recently made a claim to this operation as an original method.

Critique of Macroscopic Examination of Specimens Removed in Thirty-two Consecutive Laparotomies (with one death).— By F. Byron Robinson, B. S., M. D., Chicago, Ill.

This is an interesting paper to practical men who value most facts noted by accurate observers, such as Dr. Robinson's record shows him to be. The record of thirty-two consecutive laparotomies with only one death is something to be proud of.

Operative Surgery of the Gall Tracts, with Original Report of Twenty Successful Cholecystenterostomies by means of the Anastomosis Button.— By John B. Murphy, M. D., Chicago, Ill.

Dr. Murphy, whose name has become famous for his ingenious buttons for use in intestinal anastomosis, presents in this paper a report of twenty successful operations of cholecystenterostomies, in which his anastomosis button has been employed. Dr. Murphy is one of the men whose names have become intimately connected with the history of intestinal surgery.

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HÆMO-FERRUM.—This preparation, made by Frederick Stearns & Co., of Detroit, is said to be a natural proteid compound aseptically prepared from fresh bullock's blood, and put up in 3 grain pilloids (flat pills), with a highly soluble coating. F. Stearns & Co. claim their Hæmo-ferrum to be free from all the objectionable features hitherto attending the administration of iron in other forms, it being extremely soluble, pleasant to the taste, agreeable in odor, is readily and easily assimilated, and neutral in reaction. Furthermore, it is non-constipating (a valuable characteristic), non-irritating, and non-poisonous, even in large doses.

ARISTOL.—Dr. Hurt recommends equal parts of aristol, lapiscalinaris, and sub-nitrate of bismuth as a dressing for the umbilical cord. Dr. Adams recommends aristol in combination with opium-ergot, and muriate of cocaine as a suppository in dysentery.

Dr. Read recommends it as a dressing for the abdominal wound after laparotomy. Boenier recommends aristol in combination with equal parts of ichthylol, salicylic acid, and pro-gallic acid made into an ointment with an oleaginous mixture consisting of equal parts of vaseline, lard, and lanoline in the proportion of twenty per cent of the active ingredients. This is a very active preparation, and should be used only in small quantities.

THERAPEUTICS OF PHENACETINE.—This interesting remedy, belonging to the aromatic series of coal-tar products, is recommended by Prof. Whitaker in ten-grain doses, as an excellent means of producing sleep, as a substitute for Dover's powder. The common practice of physicians in the free use of Dover's powder and other preparations of opium, is certainly to be condemned, and it would be well to substitute phenacetine whenever this remedy can be properly used. In his recent work on "The Theory and Practice of Medicine," Dr. Whitaker makes the following judicious remarks respecting the use of phenacetine in various fevers:—

"Any case of fever above 103° is best controlled by warm baths which may be gradually cooled, or by occasional administration of phenacetine, gr. 111-V, more especially in the relief of the associated nervous symptoms." In scarlatina he prefers to reduce fever by cold, tepid or warm baths, or ablutions, but if, as sometimes happens, it is necessary to resort to the use of antipyretics, he recommends

phenacetine as the least injurious. "It may be given to a child in a dose of 11s-5 grains, to an adult in double this dose, once or twice in the course of a day. It is of especial value in headache or other nervous distress. It is best administered in capsule or in powder directly upon the tongue, stirred—that is, suspended—in milk, or in case of high fever with dry tongue, floated upon the surface of a teaspoon of water."

While an adherent of the cold bath treatment in typhoid fever, Dr. Whitaker recognizes the fact that it is sometimes impracticable and impossible. Speaking of the use of chemical agents for reducing fever in this disease, he says that "the safest of the modern antipyretics is phenacetine, which is best given in a large dose, three grains to a child, five grains in adolescence, ten grains to an adult, at the height of the temperature, which it will reduce in the course of fifteen or twenty minutes, a degree or two, with some slight sweating, which in turn aids in sustaining the antipyresis."

Dr. A. A. Stevens, in his "Manual of Therapeutics," recently published, sums up his experience with phenacetine as follows: "It may be used to lower temperature in diseases associated with higher fever, such as typhoid fever, scarlet fever, rheumatism, and pneumonia. As an analgesic it is an extremely valuable remedy in neuralgia, headache, migraine, influenza, rheumatism, and the crises of locomotor ataxia. It has been used with success as an antispasmodic in whooping cough."

HYDROZONE IN TYPHOID FEVER.—Dr. Eller Lee, in a paper recently read before the Chicago Medical Society, recommends a half teaspoonful of hydrozone in a glass of water as the best and most simple remedy that can be used as a means of producing a cure in this disease. Water is used in the form of enema for a thorough cleansing of the bowels. Water containing hydrozone, in the early stages of the disease, and glycozone later, is taken very frequently. Cool water is applied to the surface as a means of lowering the temperature. Dr. Lee prefers hydrozone to peroxide of hydrogen, 1. Because it has twice the strength, and hence twice the bactericide power; and 2. Because it is free from the metallic taste which renders the use of peroxide of hydrogen objectionable to some patients.

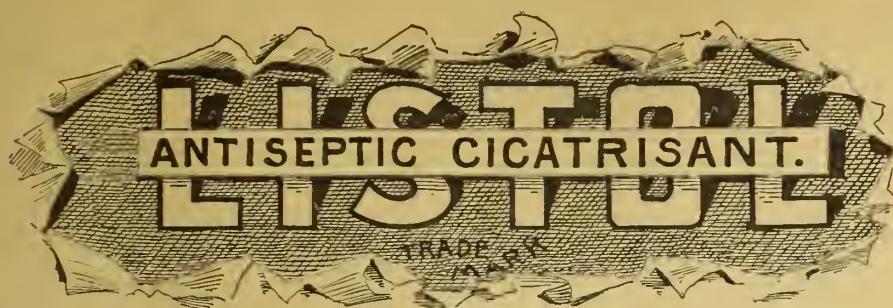
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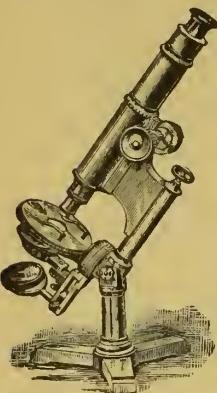
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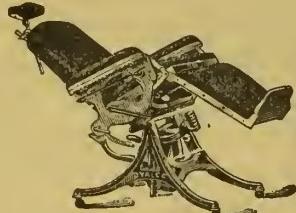


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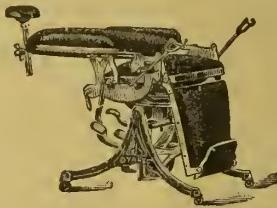


Fig. XVII—Dorsal Position.

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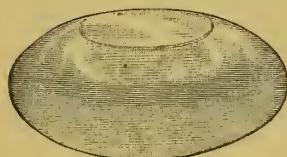
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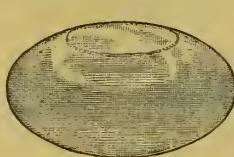
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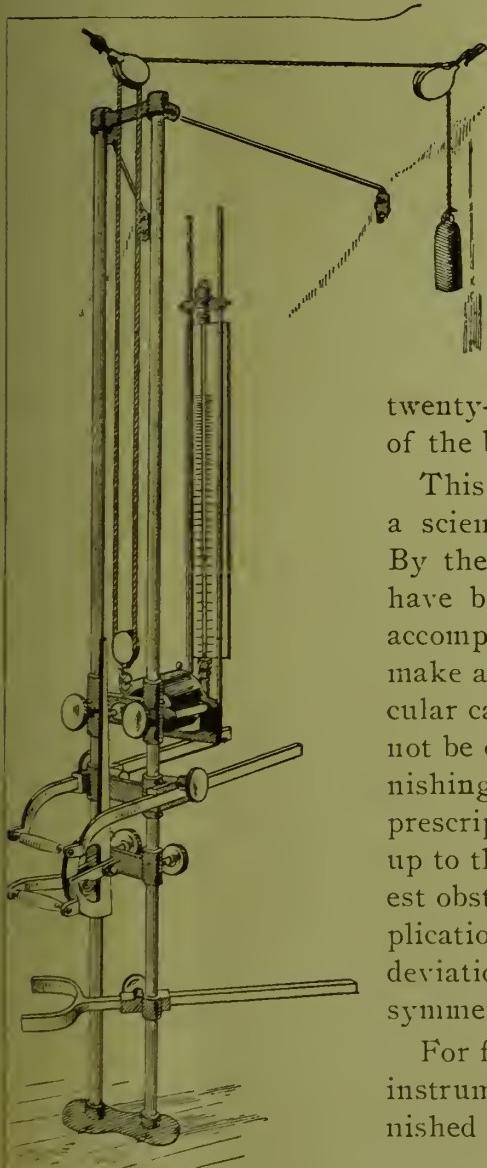
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FERRATIN is not a mechanical mixture of iron or iron-salts with other substances, but a chemical combination of iron and an albumen derivative identical to that found naturally in various food products. Professor SCHMIEDBERG established the fact that the iron necessary for blood formation is supplied to the body in THIS FORM IN ALL FOOD, both animal and vegetable, also that Ferratin is PRECISELY THAT FORM of organic iron compounds which is thoroughly assimilated by the human body.

FERRATIN is obtained as a fine powder of reddish-brown color, odorless and tasteless, and contains about seven per cent iron; IT DOES NOT INJURIOUSLY AFFECT EITHER THE STOMACH OR THE TEETH.

FERRATIN has been tried by numerous professors, physicians, and medical authorities in hospitals and in private practice, and REMARKABLE RESULTS have been obtained, especially in cases of ANÆMIA, CHLOROSIS, NERVOUSNESS, during convalescence, TO STIMULATE APPETITE, etc.

FERRATIN. For children, daily doses, 0.5 to 1.0 grammie is sufficient; for adults the daily dose may be increased to 1.5 to 2.0 grammes (20 to 30 grains) divided into two or three portions. No special attention to diet is required, but it is advisable to avoid acidulous food.



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Antipyretic, Antineuralgic, Analgesic.

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LACTOPHENIN is a new antipyretic, acting like PHENACETIN, but having over the latter THE ADVANTAGE OF A PRONOUNCED QUIETING EFFECT. Prof. von Jaksch, of Prague, has obtained the MOST SURPRISING RESULTS with LACTOPHENIN in typhoid fever, and has published the same in the *Centralblatt für innere Medicin*, No. 11, March 17, 1894.

LACTOPHENIN has been recommended most earnestly by Dr. A. Jaquet of the City Hospital in Basle on account of its antipyretic and quieting action. Dr. Jaquet calls Lactophenin THE MOST REMARKABLE OF ALL NEW ANTIPYRETICS.

LACTOPHENIN has also been indorsed by Prof. Schmiedberg, of Strassburg, Dr. Landowski, at the Hotel Dieu, Paris, and numerous other authorities, all of whom have been highly gratified by the results obtained.

The dose is 8 grains, 5 to 6 times daily, according to age.



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a pleasant and effective liquid laxative has long existed—a laxative that would be entirely safe for physicians to prescribe for patients of all ages—even the very young, the very old, the pregnant woman and the invalid—such a laxative as the physician could sanction for family use because its constituents were known to the profession and the remedy itself had been proven to be prompt and reliable in its action, as well as pleasant to administer and never followed by the slightest debilitation. After a careful study of the means to be employed to produce such

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laxative which is now so well and favorably known under the trade name of "Syrup of Figs." With the exceptional facilities, resulting from long experience and entire devotion to the one purpose of making our product unequalled, this demand for the perfect laxative

is met by Our Method

of extracting the laxative properties of Senna without retaining the griping principle found in all other preparations or combinations of this drug. This method is known only to us, and all efforts to produce cheap imitations or substitutes may result in injury to a physician's reputation, and will give dissatisfaction to the patient; hence, we trust that when physicians recommend or prescribe "Syrup of Figs" (Syt. Fici Cal.) they will not permit any substitution. The name "Syrup of Figs" was given to this laxative, not because in the process

of Manufacturing

a few figs are used, but to distinguish it from all other laxatives, and the United States Courts have decided that we have the exclusive right to apply this name to a laxative medicine. The dose of

"SYRUP OF FIGS"

as a laxative is one or two teaspoonsfuls given preferably before breakfast or at bed time. From one-half to one tablespoonful acts as a purgative, and may be repeated in six hours if necessary,

"Syrup of Figs" is never sold in bulk. It is put up in two sizes to retail at fifty cents and \$1.00 per bottle, and the name "Syrup of Figs" as well as the name of the California Fig Syrup Company is printed on the wrappers and labels of every bottle.

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— AND —

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GOING EAST. Read Down.								STATIONS.								GOING WEST. Read up.																						
11	Mail	8	Erie	4	L't'd	4	Atl.	6	Mixed	42	Pt. H	2	Pass	11	Mail	1	Day	3	Erie	23	R'd	B.C.	2	Pass	11	Mail	1	Day	3	Erie	23	R'd	B.C.	2	Pass			
Ex.	Lim.	Ex.	Ex.	Ex.	Tr'n.	Ex.	Ex.	Ex.	Tr'n.	Pass	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.	Ex.					
a m	a m	p m	p m	a m	.....	.....	.....	.....	.....	.....	.....	.....	.....	D.Chicago A.	p m	p m	p m	9.10	10.30	8.00	p m	p m	9.10	10.30	8.00	9.10	10.30	8.00	9.10	10.30	8.00	9.10	10.30	8.00	
8.40	11.25	3.10	5.05	9.00	6.00	.....	.....	.....	.....	.....	.....	.....	.....	Valparaiso..	5.05	2.45	7.10	.....	8.30	5.4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
p m	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12.40	2.35	6.30	12.00	10.05	.....	.....	.....	.....	.....	.....	.....	.....	.....	South Bend ..	3.10	1.20	5.44	7.10	7.10	4.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1.29	3.07	7.12	12.45	12.40	.....	.....	.....	.....	.....	.....	.....	.....	.....	Cassopolis ..	2.15	12.40	5.18	.....	6.30	3.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2.21	3.05	7.12	12.45	12.40	.....	.....	.....	.....	.....	.....	.....	.....	.....	Spencerville ..	2.20	12.40	5.18	.....	6.30	3.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
2.33	7.55	1.45	4.50	4.50	.....	.....	.....	.....	.....	.....	.....	.....	.....	Vicksburg ..	1.25	11.50	3.58	.....	3.50	2.58	1.25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3.40	4.30	8.36	2.46	6.20	1.00	.....	.....	.....	.....	.....	.....	.....	.....	Battle Creek ..	1.25	11.15	3.65	.....	3.50	2.58	1.25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4.33	5.11	9.26	3.25	5.25	.....	.....	.....	.....	.....	.....	.....	.....	.....	Charlotte ..	11.10	10.29	3.07	8.40	9.40	4.39	12.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5.10	5.40	9.55	4.00	5.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	Lansing ..	10.40	10.02	2.80	4.00	4.08	3.00	12.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6.30	6.30	10.45	5.03	5.03	.....	.....	.....	.....	.....	.....	.....	.....	.....	Durand ..	9.35	9.05	1.65	5.50	3.20	2.58	11.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
7.30	7.05	11.15	5.40	5.40	.....	.....	.....	.....	.....	.....	.....	.....	.....	Flint ..	8.35	8.35	1.28	5.47	5.47	3.20	11.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8.15	7.35	11.50	6.15	6.15	.....	.....	.....	.....	.....	.....	.....	.....	.....	Lapeer ..	7.49	8.02	1.00	5.10	2.25	10.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8.42	8.42	a m	6.35	6.35	Imlay City ..	7.28	4.92	4.92	4.92	4.92	4.92	4.92	
9.50	8.45	1.00	7.30	7.30	12.05 Pt. H'n Tunnel	6.25	6.50	11.55	1.55	2.50	1.20	8.40		
9.25	9.25	Detroit ..	6.40	10.40	41.05	8.40	
8.40	8.40	8.30	5.25	5.25	Toronto ..	10.10	7.20	1.0	
8.05	8.05	7.50	7.25	7.25	Montreal ..	6.00	10.15	
8.12	8.12	8.12	7.15	7.15	Boston ..	7.50	11.30	
3.05	7.65	4.25	4.25	4.25	Susp'n Bridge ..	1.20	7.05	8.40	2.2
4.15	4.15	8.30	4.40	4.40	Buffalo ..	12.00	6.15	1.0	
4.52	4.52	p m	a m	a m	New York ..	8.20	6.10	5.00	2.00	
8.12	8.12	10.20	Boston	9.00

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THREE GRAIN TABLETS
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TEN GRAIN TABLETS
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FIVE GRAIN
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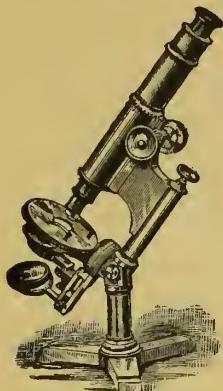
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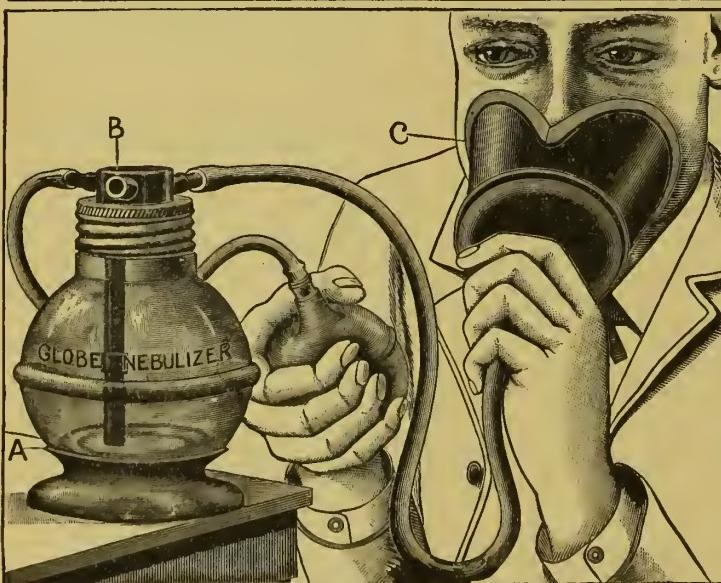
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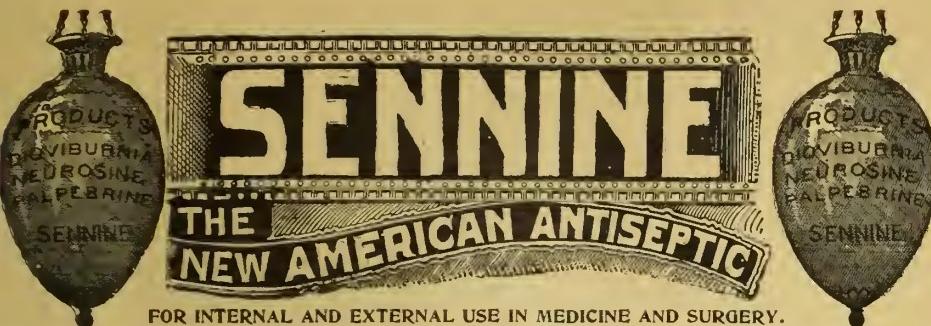
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FOR THE

Treatment of Diseases of the Nose, Throat, Middle Ear, Bronchial Tubes, and Lungs.

This Nebulizer is greatly superior to any apparatus of its kind yet produced, and embodies many new and valuable features. The atomizing tube (see cut), the cap, and air tubes are all of hard rubber and non-corrosible, not affected by oil, and not easily broken. The spray is driven against the side of the bottle, where it breaks up into a fine cloud, and when inhaled, reaches the remotest part of the respiratory tract and can be forced into the middle ear, the frontal sinus, and other cavities connecting with the nasal passages. This instrument is admirably adapted to the spraying of balsams, as well as oils, and all other solutions, and the most beneficial results have attended their use in this manner. The inhaling mask is a desirable feature not found in other instruments. Full directions and formulae with each instrument. Send for Circular. Address,

SANITARY SUPPLY CO., Battle Creek, Mich.



Composition.—A chemically Pure Product of Boracic Acid and Phenol.
Physical Properties.—A very fine white Powder, Odorless, slightly Astringent, of Sweetish Taste.
Medical Properties.—Antiseptic, Antizimotic, Bactericide, Deodorant, Disinfectant.
Comparatively Inexpensive.—Five parts Sennine dissolved in one hundred parts of water (two drachms

make four pints) is sufficiently strong for an antiseptic wash.
Free from Toxic and Irritating Effects.—A substitute for Carbolic Acid, Bichloride of Mercury, Iodoforu, etc. Put up in two-ounce tin boxes with inner perforated cover for convenience of applying. Price, \$1.00. Samples and literature mailed Free to physicians on application, or the 2 oz. Box postpaid on receipt of \$1.00.

DIOVIBURNIA

Uterine Tonic, Antispasmodic, and Anodyne.

A reliable and trustworthy remedy for the relief of Dysmenorrhœa, Amenorrhœa, Menorrhagia, Leucorrhœa, Subinvolution, Threatened Abortion, Vomiting in Pregnancy, and Chlorosis; directing its action to the entire uterine system as a general tonic and antispasmodic.

Formula.—Every ounce contains $\frac{1}{4}$ drachm each of the fluid extracts: Viburnum Prunifolium, Viburnum Opulus, Dioscorea Villosa, Aletis Farinosa, Helianthus Diocia, Mitchella Repens, Caulophyllum Thalictroides, Scutellaria Lateriflora.

Dose.—For adults, a dessertspoonful to a tablespoonful three times a day, after meals. In urgent cases, where there is much pain, dose may be given every hour or two, always in hot water.

TESTIMONIALS.

L. Ch. Boisliniere, M. D., Prof. of Obstetrics, St. Louis Medical College.

Sr. Lous, June 19, 1888.

I have given DIOVIBURNIA a fair trial, and found it useful as a uterine tonic and antispasmodic, relieving the pains of dysmenorrhœa, and regulating the uterine functions. I feel authorized to give this recommendation of DIOVIBURNIA, as it is neither a patented nor a secret medicine.

L. CH. BOISLINIÈRE, M. D.

From John B. Johnson, Professor of the Principles and Practice of Medicine, St. Louis Medical College.

Sr. Lous, June 20, 1888.

I cheerfully give my testimony to the virtues of a combination of vegetable remedies, prepared by a well-known and able pharmacist of this city, and known as DIOVIBURNIA, the component parts of which are all

well known to all physicians, and therefore have no relation to quack remedies. I have employed this medicine in cases of dysmenorrhœa, suppression of the catamenia, and in excessive leucorrhœa, and have been much pleased with its use. I do not think its claims (as set forth in the circular accompanying it) to be at all excessive. I recommend its trial, believing it will give satisfaction. Respectfully,

JOHN B. JOHNSON.

H. Tuholiske, M. D., Professor Clinical Surgery and Surgical Pathology, Missouri Medical College, also Post-Graduate School of St. Louis.

Sr. Lous, June 23, 1888.

I have used DIOVIBURNIA quite a number of times—sufficiently frequently to satisfy myself on its merits. It is of unquestionable benefit in painful dysmenorrhœa. It possesses antispasmodic properties which seem especially to be exerted on the uterus.

DR. H. TUHOLSKIE.

NEUROSINE

The Most Powerful Neurotic Attainable. Anodyne and Hypnotic.

An efficient and permanent preparation, REMARKABLE for its efficacy and THERAPEUTIC EFFECTS in the treatment of those NERVOUS AFFECTIONS and morbid conditions of the system which so often tax the skill of the physician. A Reliable and Trustworthy Remedy for the Relief of Hysteria, Epilepsy, Neurasthenia, Mania, Chorea, Uterine Congestion, Migraine, Neuralgia, all Convulsive and Reflex Neuroses, the Remedy Par Excellence in Delirium and Restlessness of Fevers.

Formula.—Each fluid drachm contains five grains each, C. P. Bromides of Potassium Sodium and Ammonium, $\frac{1}{6}$ grain Bromide Zinc, 1-64 grain each of Ext. Belladonna and Cannabis Indica, four grains Ext. Lupuli, and five minimæ fluid Ext. Cascara Sagrada, with Aromatic Elixirs.

Dose.—From one teaspoonful to a tablespoonful, in water, three or more times daily, as may be directed by the physician.

To physicians unacquainted with the medicinal effects of Diovisburnia, Neurosine, and Sennine, we will mail pamphlets containing full information, suggestions, commendations, of some of the most prominent professors in medicine, and various methods of treatment; or to those desiring to try Diovisburnia, Neurosine, and Sennine, and who will pay express charges, we will send on application a trial bottle of each, free.

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IS THE STRONGEST ANTISEPTIC KNOWN.

One ounce of this new Remedy is, for its Bactericide Power, equivalent to two ounces of Charles Marchand's Peroxide of Hydrogen (medicinal), which obtained the Highest Award at the World's Fair of Chicago, 1893, for

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CURES DISEASES CAUSED BY GERMS:

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Both Medal and Diploma

Awarded to Charles Marchand's Glycozone by World's Fair of Chicago, 1893, for its powerful healing properties. This harmless remedy prevents fermentation of food in the stomach and it cures:

DYSPEPSIA, GASTRITIS, ULCER OF THE STOMACH, HEART-BURN, AND ALL INFECTIOUS DISEASES OF THE ALIMENTARY TRACT.

Send for free 152-page book giving full information with endorsements of leading physicians. Physicians remitting express charges will receive free samples.

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Hydrozone is put up only in small, medium and large size bottles, bearing a red label, white letters, gold and blue border, with signature.

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MODERN MEDICINE

• • AND • •

BACTERIOLOGICAL REVIEW.

VOL. IV.

BATTLE CREEK, MICH., U. S. A., JULY, 1894.

NO. 7.

ORIGINAL ARTICLES.

THE RELATION OF STATIC DISTURBANCES OF THE ABDOMINAL VISCERA TO DISPLACEMENTS OF THE PELVIC VISCERA.

BY J. H. KELLOGG, M. D.

BATTLE CREEK, MICH.

(Continued.)

The Relation of the External Form of the Trunk to Visceral Prolapse.—Quite a number of years ago I began the study of the relation of deviations from the normal state in the outlines of the body to various forms of pelvic and abdominal diseases by the aid of a simple apparatus which I had constructed for the purpose, by means of which it is possible to make an exact profile of the body in an upright position in any plane. The apparatus consists of the following parts: 1. A frame attached to a close back of proper width and height, the upright bars in front of the back of the apparatus being exactly parallel with it; 2. A pencil carrier which is placed against, and made to move upon, the two uprights in any position in a plane parallel with the back. The pencil carrier is always at exactly right angles with the back. In preparing the apparatus for use, a piece of strong paper of proper size is fastened upon the back by means of thumb tacks. The patient is then made to stand with the back against the paper, with the heels, hips, and shoulders touching the paper, and the hands grasping the sides of the apparatus to secure absolute steadiness during the tracing. The patient is protected in the meantime by a sheet at-

tached to a cord loosely tied about the neck, and when in place, the pencil carrier is carried to position, and an outline of the figure rapidly drawn. Another paper being placed in position, the side profile is taken in a similar manner. For convenience in measurement and to facilitate the location of the parts, the exact size and position of which it may be necessary to indicate upon the outline, a vernier is placed upon each one of the four uprights of the apparatus. By means of a leveling rod passed through the center of the pencil carrier, and used in connection with the vernier, it is possible to locate and represent exactly the position of any organ of the body. The outlines shown in connection with this paper were made with this apparatus, which is represented in Fig. 2. Plate 1, Fig. 5, shows the outlines of a healthy woman. Figures 1-4 and 5-14 show outlines of women suffering from various forms of visceral displacement.

Relation of the Proportions of the Trunk to Visceral Prolapse.—For some years I have made careful anthropometric studies of all my patients, making measurements according to the rules generally followed in observations of this kind. I have extended my study to the peasant women of various nationalities, especially French, German, Italian, and Chinese women, a single tribe of East Indian women, and the women of a number of the primitive American Indian tribes of Arizona, New Mexico, and the Indian Territory. The studies which I have made in this direction have developed the fact that the waist of the average American woman is much smaller in proportion to the height than that of the savage or semi-civilized woman, or the women of other civilized nations. The following table briefly summarizes some of the results obtained:—



Fig. 1. Reformed corset wearer.



Fig. 2. The same with corset.

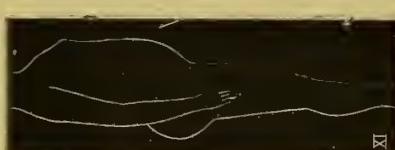


Fig. 3. Young woman whose clothes were never tight.



Fig. 4. Side view of same.

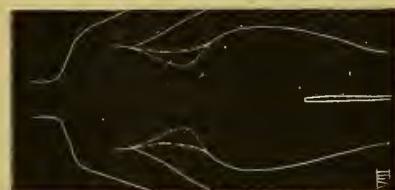


Fig. 5. A German peasant woman.

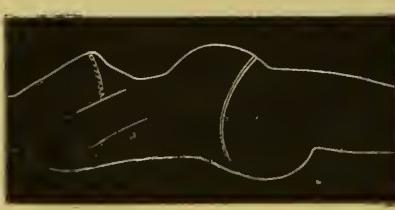


Fig. 6. Effects of corsets and tight bands, on an American woman of same age.



Fig. 7. Effects of light hands and heavy skirt.



Fig. 8. Front view of same, wearing and tight bands.



Fig. 9. Effects of corsets, wearing and tight bands.



Fig. 10. Man who has worn a belt.

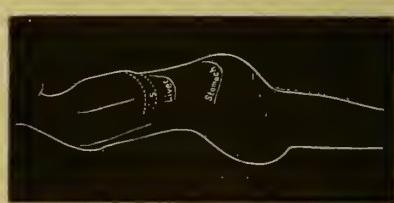


Fig. 11. Effects of a "Health Corset."

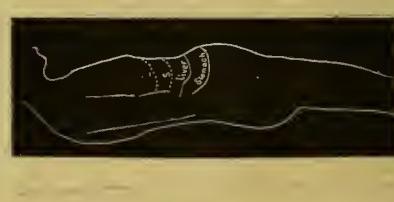


Fig. 12. Front view of same, from corset-wearing.



Fig. 13. Displaced spleen from corset-wearing.



Fig. 14. Front view of same.

	Av. height	Av. waist	Av. waist percentage of height
American women	... 61.94 in.	24.79 in.	40.
Telugu	" 60.49	24.65	40.6
French	" 61.01	28.00	45.4
Chinese	" 57.85	26.27	45.4
Yuma	" 66.56	36.84	55.2
Venus de Milo			47.6

The Telugu women of India, whose waist proportion is 40.6 per cent of the height, are the only race which approaches American women in the smallness of the waist, and Dr. Cummings, who made for me a considerable number of measurements of the women of this tribe, stated that it was their custom to support the skirt, which forms their principal article of dress, by means of a cord tied about the waist and drawn as tightly as possible. This fact evidently explains the reason of the unusual smallness of waist in Telugu women, and suggests the cause of the same deformity in civilized American women, a peculiarity that is not exhibited by the aboriginal women of this country.

Mrs. Langtry, the famous English beauty, whose proportions were recently published, gives her height as 67 inches and her waist as 26 inches, a waist proportion of 38.8 per cent. If Mrs. Langtry is a representative of the women of her country, English women have still smaller waists than American women; but the average waist proportion of twelve English women, brick-makers, whom I measured a few years ago at Lye, in the so-called "black country" of England, I found to be 41.3 per cent, which is a trifle more than that of American women. The waist proportion of 2000 men measured by Dr. Seaver, of Yale, I find to be 42.7 per cent, figures which are slightly exceeded by the proportion determined by my own measurements of men.

That this smallness of waist of the civilized woman is an acquired deformity, is evident from a study of the Venus de Milo and other ancient Grecian statues, in which I find the waist proportion to be very much greater than that of the civilized woman of the

present day, and also by the recognized anatomical fact that the pelvis of the civilized woman is much broader than in women of savage tribes and semi-civilized nations. The physiological cause which gives rise to increased capacity of the pelvis in civilized women certainly would not at the same time produce a diminution in waist capacity.

Considering the abnormal smallness of waist in American women as an acquired deformity, we should expect to find this peculiarity of figure accompanied

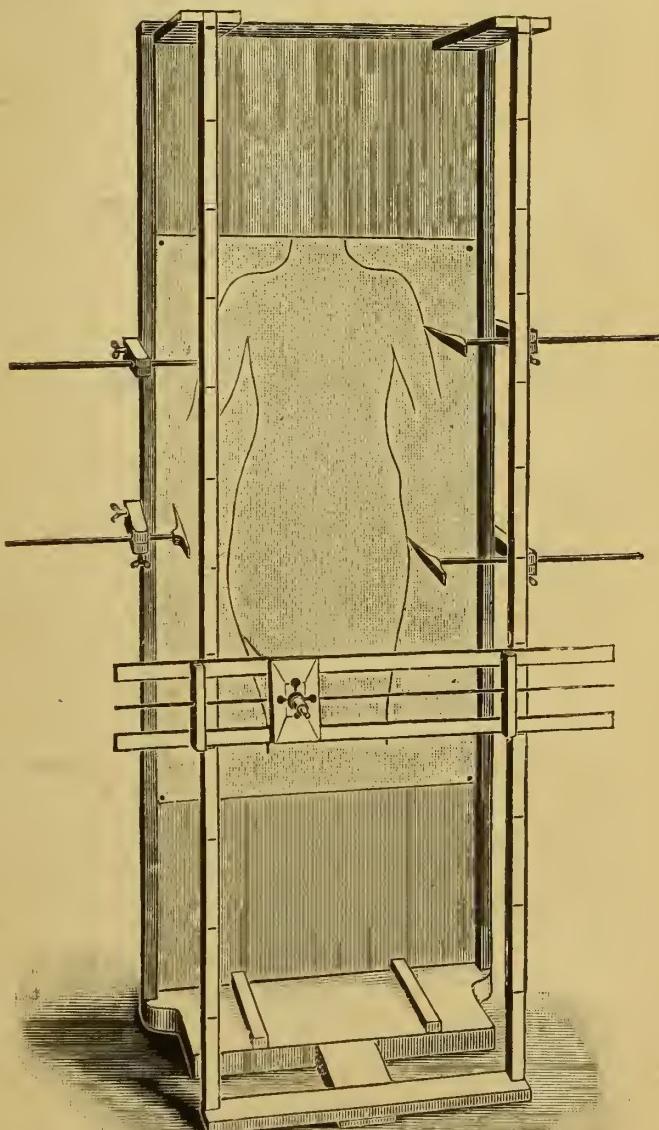


Fig. 2.—Apparatus for tracing an outline of the body.

by a very considerable disturbance in the static relations of the abdominal viscera, especially when recalling the fact that all the solid viscera of the abdomen are placed at its upper part, and are included within that zone of the trunk usually termed the waist, so that the smallness of the waist would indicate either a corresponding diminution in the size of the viscera occupying this portion of the trunk, or a downward displacement of these organs.

Since a comparative study of the viscera of men and women shows that the liver, the principal viscus located in this region of the body, is proportionately larger in women than in men, it is evident that the only explanation of the smallness of the waist in civilized women is to be found in the lowering of the position of the organs of the lower trunk, and not a diminution in size.

Another evidence of the deformity of the figures associated with prolapse of the viscera of the trunk, is the lowered position of the umbilicus. The extensive researches of Dr. Giovanni, recently published by him in a remarkable work upon the morphology of the human body, have established the normal position of the umbilicus as midway between the lower extremity of the sternum and the pubes, not including the zyphoid cartilage. In one hundred cases of displacement of the pelvic viscera, I found the umbilicus to be on an average one inch below the normal position, due to the sagging of the bowels. This observation agrees with that of Mr. Lockwood, of St. Bartholomew Hospital, in London, who has shown by elaborate post-mortem studies, that hernia is accompanied with prolapse of the mesentery and the attached bowel to the extent of four to nine inches. Mr. Lockwood, in a public address upon the subject, called attention to the influence of tight lacing in producing this prolapse in women.

Relative Frequency of Displacement of the Abdominal and Pelvic Viscera.—By a study of the position of the abdominal and pelvic viscera, in relation to each other and to their normal position, and with special reference to the normal configuration of the body, I have noted some facts which have been to me of very great interest, and which seem to agree fully with the views above presented. Figures 1-4 and 7-14 present typical examples of

a large number of cases which I have met, and show both the general configuration of the body and the position of the principal viscera of the lower cavity of the trunk. The association of a small or flat waist and prominent abdomen with displaced viscera is extremely constant in my observations.

In a series of 517 cases of women suffering from visceral prolapse affecting either the organs of the abdomen or pelvis, studied with reference to the relative frequency of static disturbances of the abdominal or pelvic viscera respectively, my observations were as follows:—

Cases of marked displacement of abdominal viscera (stomach, colon, liver, kidneys, spleen).....	479.
Cases of displacement of the pelvic viscera.....	276.
Cases of displacement of abdominal viscera without displacement of pelvic viscera ..	241.
Cases of displacement of the pelvic viscera without displacement of the abdominal viscera.....	38.
Per cent of cases of prolapse of abdominal viscera without displacement of pelvic viscera.....	50.3
Per cent of cases of displacement of the pelvic viscera without displacement of the abdominal viscera.....	13.

The particulars respecting the displacement of the abdominal viscera are as follows:—

Cases of prolapse and dilatation of the stomach and prolapse of the colon (the stomach being considered dilated or prolapsed when the lower border reaches the umbilicus, as determined by clapotement).....	382.
Cases in which one or both kidneys were distinctly movable and floating, usually the right.....	203.
Cases of marked downward displacement of the liver.....	16.

It is hardly necessary to comment upon the above figures, as they seem to show so clearly a positive and intimate relation between visceral displacements in the pelvis and the same condition in the abdomen. It seems to be a legitimate conclusion from the facts above presented that visceral displacements of the pelvis are not usually a disease of this region of the body alone, but are simply a local expression of a general disorder, which affects more or less extensively the entire viscera of the trunk below the diaphragm. The great frequency with which displacements of the abdominal viscera are found when attention is directed to the static relations of these

organs as compared with the static disturbances of the pelvic viscera, is quite in harmony with the anatomical fact that the pelvic viscera are surrounded with much more efficient safeguards against displacements than are the viscera of the abdomen.

A careful analysis of the symptoms presented in several thousand cases of women presenting distinct evidences of pelvic disease, has convinced me that a large share of the nervous and other functional disorders from which these patients suffer, are due not so much to the pelvic disorders themselves, especially in cases of displacement of the pelvic viscera, as to the general condition of the visceral prolapse prevalent among all the organs of the lower half of the trunk.

Dr. Trastour has clearly shown the important relation of the normal *statique abdominale* to health in both men and women. Any considerable change in the static relations of the abdominal viscera results in disease as certainly as does a similar disturbance of the pelvic viscera. The strain upon, and the constant irritation of, the great sympathetic centers of the abdominal region, resulting from displacement of the colon, kidneys, or liver, is a constant source of reflex irritability, which, acting first upon the great centers of the brain and spinal cord, may be reflexed to any or all parts of the peripheral nerve ramifications. That such an irritation exists is shown by the fact that tenderness of the solar plexus, of one or both of the lumbar ganglia, or of the lumbo-arcic plexus, either one or all of the conditions named, was found in a large proportion of the total number of cases to which the above statistics relate. It is doubtless true that in some of these cases the irritation of the sympathetic ganglia may have been the result of the peripheral irritation in the pelvic viscera; but that irritation of the ganglia is not generally the result of peripheral irritation in the pelvis is evidenced by the frequency with which a hyperæsthetic state is encountered in women who present no abnormal condition of the pelvic viscera, and in men equally free from pelvic disease.

Prolapse of the organs of the abdominal cavity necessarily tends to produce displacements of the pelvic organs, although it is surprising to note with what obsti-

nacy the viscera of the pelvis not infrequently resist the disturbing influences of the extensive static disturbances of the viscera of the abdomen. How displacements of the stomach, colon, liver, or kidneys may occasion disease is a pathological question which need not here be discussed, since the perversions of the tissue metamorphosis naturally resulting from a disturbance in the blood supply, and from the development of abnormal and pernicious nerve reflexes, are etiological factors, the influence of which is well known, and which are certain to come into action in an organ crowded by abnormal pressure out of its proper place. Prolapsed intestines become congested, and not infrequently a pseudostricture of the large intestine is occasioned by a folding of the viscus upon itself. Stasis of the contents of the intestines leads to fecal accumulation and consequent dilatation and atony, and thus the causes which tend to produce visceral displacements in the pelvis are accumulated and aggravated.

Causes of Visceral Displacement.—Respecting the causes of visceral displacements of the abdomen and pelvis, I believe that too much attention has been generally given to etiological factors, which though in themselves potent causes of static disturbance, are not infrequently, and even usually, the results of other causes more fundamental in character, but which are commonly overlooked.

As regards American women, I have become quite convinced that the principal predisposing causes of visceral prolapse in the abdomen and pelvis are, first, an unhealthful mode of dress in which the central portion of the trunk is abnormally constricted; and secondly, a neglect to secure by proper muscular exercise that vigorous and symmetrical physical development which is essential to the health of the entire body as well as that of the organs which occupy the cavity of the trunk below the diaphragm. In referring to the pernicious influences of the ordinary civilized dress, I do not speak of tight-lacing for the reason that the dress worn by the civilized woman is, with the rarest exceptions, universally open to criticism on the ground of abnormal pressure of the abdominal contents. Women rarely admit themselves to be guilty of tight lacing. But even in the cases of those who consider them-

selves examples of moderation in this respect, the tapeline drawn about the waist will disclose the fact that the clothing fits the form so tightly that the amount of room left for expansion in breathing is scarcely a quarter or a half of an inch, and in many cases even less. It is not tight lacing which does the great majority of civilized women injury, but a dress which fits the form so snugly in the narrow zone of the waist that the increased thoracic space demanded in respiration can be secured only by a downward displacement of the viscera to an abnormal extent.

The injury resulting from the mode of dress common among civilized women, is chiefly due, first, to mechanical displacements through constriction of the trunk in its most yielding part; and secondly, interference with respiration.

In Figures 1-4 and 6-14 is shown the deforming influence of waist constriction and the displacing influence of heavy skirts hanging upon the waistbands, which, though often loose when applied to the body, become tight by the downward traction of their weight, and exert a powerful displacing influence upon the viscera.

I recently made a comparative study of the effects of the common dress of men and women, selecting for the purpose 71 working women and 50 working men, all of whom were in ordinary health.

In the 71 women examined, prolapsus of the stomach and bowels was found in 56 cases. In 19 of these cases the right kidney was found prolapsed or movable, and in one case, both kidneys. The 15 cases in which the stomach and bowels were not prolapsed were all persons under 24 years of age. None of these had ever laced tightly, and four had never worn corsets or tight waistbands, having always worn clothing suspended from the shoulders. It is noticeable that in a number of cases in which corsets had never been worn, tight waistbands had produced very extensive displacement of the stomach, bowels, and kidneys. In one of these the liver was displaced downward.

In the 50 men were found only six in whom the stomach and bowels could be said to be prolapsed. In one the right kidney was prolapsed. In only three was the degree of prolapse anything at all comparable with that observed in the women and in these three (and in

one other of the six cases, making four in all), it was found on inquiry that a belt or something equivalent had been worn as a means of sustaining the pantaloons. In one case the patient attributed his condition to the wearing of a truss supported by a belt drawn tightly about his waist. This belt had been worn a sufficiently long time to be an ample cause for the displacements observed. In the two cases of slight visceral prolapse in which belts had been worn, there was considerable deformity of figure, due to general weakness, and the habit of standing with the weight upon one foot. By comparison, we see the relative frequency of visceral prolapse in the men and women examined, was 12 per cent for the men and 80 per cent for the women. In other words, visceral prolapse was found to be six and three-fourths times as frequent in women as in men. It is also noticeable that, with the exception of two cases, visceral prolapse in men was due to the same cause which produced visceral prolapse in women; viz., constriction of the waist. It makes no difference, of course, whether the constriction is applied by means of a corset, a waistband, or a belt.

I have met a number of cases of visceral prolapse in men in which the disease was directly traceable to the wearing of a belt. One case was that of a military officer who wore a tight sword belt by which he carried almost constantly a heavy sword. I have observed one case of prolapse of the kidneys in a blacksmith in which it was due to the practice common among this class of mechanics of sustaining their pantaloons by means of the strings of their leather aprons tied tightly about the waist, the suspenders being loosened so as to give greater freedom to the movements of their arms. Leaving out of consideration the four cases of men in whom the visceral displacement was due to the same causes which produce this morbid condition in women, I find but two cases in which the viscera had become displaced from other causes, or one in twenty-five,—a frequency just one twentieth of that in which this diseased condition is found in women who consider themselves in ordinary health.

The downward displacement of the abdominal viscera resulting from limitation of the waist movements in respiration

tion, is shown in Fig. 2. This effect becomes especially apparent in forced respiration. Normally the lower abdomen is slightly drawn in at the end of a full inspiratory effort, but when the waist is so disabled by a corset or bands that normal expansion in this region cannot occur, the increased thoracic inspiration can be acquired only by downward displacement of the viscera, which is increased by the exaggeration of the intra-abdominal pressure resulting from the increased respiratory effort required to secure the needed amount of air.

Amount of Pressure Exerted by Tight Bands and Corsets.—As the result of a large number of observations, I have found the average pressure exerted at the waist by a tight corset or tight waistbands to be, in ordinary respiration, about .3 of an inch of mercury. The measurements were made by means of a mercurial manometer. In forced respiration, I found the pressure exceedingly variable, ranging from one to twenty inches, the equivalent of which in pounds is about one half to ten pounds per square inch. In taking these measurements, the rubber bulb connected with the dynamometer was placed underneath the corset next to the body, and, of course, the results given do not represent accurately the amount of pressure exerted within the abdominal cavity or pelvis; nor is it to be supposed that the force indicated is exerted on every square inch of the entire area of the corset, but only over the area of the greatest constriction.

To be continued.)

THE ELECTRIC-LIGHT BATH.

BY DR. WILLIBALD GEBBARDT.

WITH great interest I recently read an article on American Sanitariums, published in the *Hygienische Korrespondenz*.

During my last year's trip in America, I visited the Sanitarium in Battle Creek, Michigan, which place is reached after about four hours' ride from Chicago. Altogether the Sanitarium is a model institution, which was started on a very small scale, but has become an immense institution of great importance. During the year the attendance is very large, amounting to several thousand. As in

many other things, we Germans can learn a great deal from Americans as regards advantageous constructions, practical arrangements, and wise administration of such institutions.

At this time I will only call attention to a new invention in which I was greatly interested, not so much because it startled me as something new, but on account of its practical value, combined with comparative simplicity. I speak of the electric-light bath, which was invented and first used at the Battle Creek Sanitarium.

The first chance I had to see and use the light bath was in the branch Sanitarium in Chicago, which has recently been founded, and which is in close relation to the mother institution in Battle Creek.

The electric-light bath consists of a cabinet, the floor of which measures about one square meter, and which has a height of about two and one half meters, so that a person can easily sit in it—a turning chair is used for this purpose. The walls are completely covered with mirror-glass, and about forty or fifty electric lights are distributed in such a way that every part of the body of the one in the bath is almost equally exposed to the light. Holes in the floor and on the top provide a free circulation of fresh air. The door can be opened both from without and from within. After the patient is seated on the chair in the cabinet, the lights are turned on, and the entire room is filled with a mighty flood of light, which is reflected from all sides and thrown on the person. At first I was afraid that this intense light might have an unpleasant or even exciting effect, but just the opposite took place; it made me feel at ease, and proved to be calming. And even if the powerful light should have an unpleasant effect on the bather, he can easily moderate and regulate it by turning on the lamps one after another just as he pleases or is able to stand it.

The electric-light bath in the Battle Creek Sanitarium is arranged in such a way that the head of the patient can remain entirely outside of the bath; this is accomplished by an arrangement similar to the boxes used in Germany for vapor baths. These boxes will probably come into more common use than the ordinary Russian or Turkish baths, in which several very sick persons are often together, so that one has to respire the perspiration of the others, and the most

sensitive part of the body, the head, is often seriously affected by the heat. But besides the many advantages of the sweating boxes, they have also several disadvantages. The sudden streaming in of the steam into the box is very annoying, and cannot be regulated exactly, so that the temperature in different parts of the box varies; for this reason the thermometer at the top does not always indicate the real temperature. Moreover the limited space of the box, which can be left only by the assistance of the attendants, makes one feel uneasy; and this lack of freedom becomes very unpleasant when the attendant is absent for awhile.

The electric-light bath has none of these inconveniences; the temperature is the same in all parts of the cabinet, and can be increased or decreased at will, according to the number of lights turned on or shut off. In order to make the person bathing more independent of the attendant, it might be arranged so that the lights could be turned on or off from within; however, the patient can leave the cabinet at any time, his liberty not being restricted at all.

Above all things, the absorption of heat by the body in the electric-light bath exerts the most beneficial effect, much more than in the vapor or hot-air bath. Within three minutes, when all the lamps were burning, I noticed that the temperature had risen to 95° F.; two minutes later it was 105° F. and if desirable, it can be raised still higher, to 115° F., and more. Though it requires a different length of time with different persons to induce perspiration, persons with an active skin will begin to perspire in a few minutes when the temperature of the air remains at 90° F.

The time one stays in the bath varies from 5 to 20 minutes. The light bath, as also the steam bath, is followed by the refreshing application of cold water.

The electric-light bath is of particular interest to the physiologist, for it offers to him the best opportunity to gather the waste products of the system that are excreted by the skin and to examine them. I myself expect to make a series of physiological chemical experiments on this subject, in order to furnish scientific proof that by artificially increasing the temperature corresponding to the natural process of fever, the system gets rid of

morbid matter. This would demonstrate the great importance of sweating, which is not sufficiently appreciated.

For the present I would not enlarge on the importance of the electric-light bath as a curative agent; however, I wish to point to the fact that physiological experiments made on plants have shown that the electric-light has the same properties as sunlight. For this reason the electric light bath is an excellent substitute for sun-baths, the merits of which were appreciated by science long ago. And this substitute is at our disposal at any time, whether on rainy summer days, at night, or in the winter. What bright prospects for the inhabitants of our latitude, who enjoy so little of the sunlight!

Finally, I believe that proper arrangements might be made for local light baths, such as head, foot, or trunk baths. I shall not fail to try this in the "Gesundungsheim" in Borgsdorf, which establishment will soon be started by the Pioneer Association.

We therefore welcome the electric light bath as a new and important therapeutic agent, which doubtless has a great future. The development of the science of electricity and the facilities in the use of the electric current, promise to the light bath an increasing importance.

Hoffmann's Medical Philosophy.—Frederich Hoffmann, one of the most eminent physicians of the seventeenth century, was born in Halle, Saxony, in the year 1660. At the age of thirty-four he was made professor in the University, and lectured upon the science of medicine for forty-eight years. His eminence was so great that the famous Boerhaave, when consulted by the king of Prussia, Frederich William I, in relation to his health, said, "Your Majesty, my best advice is this, Consult Hoffmann."

Hoffmann's philosophy was a very simple one. His therapeutic remedies consisted almost exclusively of exercise and rest, diet and the use of water in various ways. The following quotation is an excellent résumé of his principles:—

"He who carefully observes and tests Nature's art of healing is forced to the conclusion that the basis of all health, life, and disease is an exceedingly simple one, which never changes, and is never confused. It is a matter of surprise,

therefore, that physicians have invented so many means of cure to preserve health and to combat disease. Nature maintains life by simple processes. A few contrivances serve her for the preservation of health, nor are the causes of disease many. It is justifiable, therefore, to assume that the remedies to be used in restoring health should be neither complicated nor numerous. Indeed, we may not only assume, but I most positively affirm (and it may be put down to the misfortune or abuse of therapeutics), that the mass of medicaments and elixirs found in the works of both ancient and modern physicians have had no other purpose than to impede the art of healing, and to make it uncertain and deceptive. Certainly the medicines by means of which the physician can support the efforts of nature, achieve success, cure the sick, and win honor for himself, are by no means numerous. There are many things which, though they appear to have little influence in the healing of disease or the preservation of health, yet possess unthought-of power. Of this kind are those six matters called the non-natural (air, food, motion, and rest, sleeping and waking, the passions, the excretions), whose intelligent application may be of the greatest service in the art of healing without medicaments. We have an example of their power in the influence of movement and in the exercise of the limbs. The influence of exercise is strong, if we can believe the testimony of the ancients and our own experience, that where disease is to be prevented or cured it is to be prized more than the most costly medicaments."

A Simple Way for Making Ice.—The following is a simple method for making ice artificially, when it cannot otherwise be obtained:

In a metal flask place about two thirds of an ounce of a mixture of equal parts of sulphuric ether and carbon-di-sulphide; close the orifice of the flask by a stopper with two orifices, leaving one open, and passing through the other a glass tube terminating in a fine point which nearly touches the surface of the liquid. The other end of the glass tube is connected by means of a rubber tube with a bellows giving an extended current. The flask thus arranged is placed in a suitable

vessel containing the water to be frozen. A strong current of air is forced through the flask by the bellows. The rapid evaporation of the ether and carbon-di-sulphide which is thus induced, causes a reduction of temperature to zero almost immediately, and ice is quickly formed.

A Purgative Enema.—The following is a very powerful stimulative enema, useful in cases of obstinate constipation, after ovariotomy, and in other cases in which a prompt and thorough evacuation of the bowels is required but in which salines are contra-indicated or cannot be retained by the stomach: —

B Magnesia glycerine, sulphate,
water, *aa*, oz. 2
Oil of turpentine, oz. $\frac{1}{2}$
M.

Leprosy in Norway.—Dr. Beutzen has recently published statistics relating to leprosy in Norway, by which it appears that in 1885 there were 1375 lepers, something less than half of whom were in the different leper hospitals of the country. Five years later the number of known lepers was reduced 960, about equally divided between men and women, the number in hospitals remaining about the same, or a little more than 500. The disease is said still to be relatively common on the west coast from Stavanger to Nordland. More than half of the lepers known in 1890 were suffering from the tubercular form of the disease. Of 993 cases under treatment, thirteen recovered, and 154 others became so much better as to be discharged, from which it appears that the disease is not absolutely incurable. In 265 cases of death, the duration of the disease was 12.5 years. The average duration in 182 cases of tubercular leprosy was 10.4 years, and in seventy-two anaesthetic cases, 17.7 years. Of 7635 lepers observed during thirty-five years, 186 recovered.

Massage in Goiter.—Dr. Szuman reports a case of successful treatment of bilateral goiter by massage practiced after the method of Höffinger. The patient was a young man of nineteen, in whom the disease was of eight years' standing. The results in this are certainly a basis for the hope that massage may be useful in these cases, at least if combined with galvanism and hydrotherapy.

TRANSLATIONS AND ABSTRACTS

[THE articles in this department are prepared expressly for this journal.]

PATHOLOGY OF THE FALLOPIAN TUBES.

DR. F. BYRON ROBINSON, in the *International Journal of Surgery*, sums up, in the most succinct manner, the pathology of the Fallopian tubes. We quote from his paper as follows:—

“1. The pathology of the Fallopian tubes should be studied in regard to their structure, function, and their connection with the peritoneum.

“2. The inflammatory processes may be divided into three varieties; viz., 1. Endosalpingitis; 2. Muscular salpingitis; 3. Perisalpingitis (pelvic peritonitis).

“3. The inflammatory process in the peritoneum spreads from the abdominal end of the tube in nearly all cases.

“4. The nodular masses found in the pelvis are perisalpingitis, and not cellulitis.

“5. Autopsies demonstrate that severe perisalpingitis, or pelvic peritonitis, may exist while the subperitoneal tissue is white as snow, as beautiful as hoar-frost.

“6. Convoluted, contorted, or spirally twisted tubes are accompanied by tubal colic. Such tubes are congenital, or the result of subinvolution. The *tenia tubæ* enhances the condition.

“7. At the bottom of most tubal trouble can be traced labor, abortion, gonorrhœa, and sepsis.

“8. A pyosalpinx can be changed into a hydrosalpinx, and recover without operation.

“9. Primary sarcoma, cancer, and tuberculosis of the tubes are quite rare.

“10. No tube should be removed unless pathological conditions can be demonstrated in it, except for myoma and hysterical convulsions.

“11. A pyosalpinx should be removed on discovery.

“12. Adhesions alone may be a sufficient cause for tubal removal, on account of nerve pressure and irritation.

“13. A large portion of the evil influences of tubal disease is due to the irritation's being transmitted to the abdominal brain, and then emitted to every viscus, destroying its rhythm and nutrition.

“14. In removing tubes, the ligature should be placed close up to the uterus, so that menstruation will stop immediately by removing all the ‘automatic menstrual ganglia’ belonging to the tube.

“15. Uterine curetting in tubal disease should be judiciously employed. I know of several deaths from such procedure.

“16. There is no doubt that much tubal pathology results from ‘tinkering’ with the uterus, the introduction of sounds, electrodes, unclean instruments, and unnecessary curetting. Dilatation of the uterus is sometimes followed by tubal pathology.”

We entirely agree with Dr. Robinson in all his observations, with the exception of his 10th proposition; namely, that no tube should be removed unless pathological conditions can be demonstrated in it, except for myoma and hysteria. We think Dr. Robinson will not disagree with us in holding that whenever it is necessary to remove an ovary for any cause, the tube should also be removed. There is certainly no advantage in leaving the tube behind when the condition of the ovaries is such as to require removal.

We wish especially to emphasize the important bearing of Dr. Robinson's 13th proposition, which calls attention to the great importance of the abdominal brain, or solar plexus, and its relations to the viscera. This is certainly a subject which has been very much neglected. It is our belief that considerably more than half the symptoms complained of by invalid women who suffer more or less from pelvic ailments, are directly due to disturbance of the abdominal sympathetic. The importance of the group of ganglia which is represented by the abdominal sympathetic,—the so-called semi-lunar ganglia which enter into the solar plexus, and especially the two lumbar ganglia situated on either side of the umbilicus, with the lumbo-aortic plexus just below it,—is due to their connection with the pelvic and abdominal viscera, with the heart and lungs, and through the central nervous system, with every organ of the body. Morbid conditions of these ganglia are the most prolific sources of paræsthesias, functional disturbances of the special senses, and even brain disorders extending to delirium and unconsciousness. The sympathetic

nerve and its relations are subjects worthy of much more attention than they have thus far received.

ETHER ANÆSTHESIA.

PROF. PONSET, of Lyons, has recently published in the *Province Medicale*, an interesting paper upon the subject of ether anæsthesia. The paper sums up the experience of M. Ponset in 20,000 etherizations within the last twenty-five years. M. Ponset prefers ether to chloroform, the only other anæsthetic at all comparable to it, for the following reasons:—

1. Because it is less dangerous. M. Ponset regards the use of ether as almost absolutely free from danger. He has sometimes seen arrest of respiration during ether anæsthesia, but has always been able to avert a fatal result. The toxic effects of ether upon the respiratory centers are not manifested in a sudden manner, but are preceded by phenomena which attract the attention of the physician by noisy respiration, progressive cyanosis, etc. With chloroform, the respiratory movements, and the heart especially, are suddenly arrested, and many times nothing whatever can be done. Ether is regarded by all surgeons as less liable to kill than chloroform. Deaths from ether occur in persons suffering from pathological conditions which had escaped attention, but which are revealed by autopsy. This is not the case with chloroform, which kills suddenly, without warning, and often in an inexplicable manner. Ether, of all anæsthetics, gives the maximum of security, and for this reason should be given absolute preference. However, the employment of ether is accompanied with some inconveniences, and, under some circumstances, is even dangerous, which may render necessary the employment of some other anæsthesia.

Cases in which chloroform should be used in preference to ether, are:—

1. In children until the age of fourteen or fifteen years. Ether irritates the air-passages in young subjects, and gives rise to a secretion of mucus so abundant that asphyxia frequently results. This symptom requires great care, not only during the administration of the

anæsthetic, but afterward. Still greater care must be exercised in cases in which there are symptoms of bronchial catarrh.

2. Ether is also contra-indicated in old persons suffering from eczema or bronchial catarrh. Ether may give rise, within a few days following the operation, to acute bronchitis, and even fatal bronchial pneumonia.

Precautions.—Anæsthesia is dangerous in patients suffering from suffocating goiter. Local anæsthesia induced by cocaine, is preferable in such cases.

Especial care is required in the administration of an anæsthetic for operation upon the face or neck, as in the removal of the lymphatic glands or congenital tumors. Such operations within the zone of nerves originating in the bulb, easily give rise to reflexes which may arrest the action of the lungs or heart. He recommends its use, pure, in doses of 300 grms. for each anæsthesia. His method he denominates "*La Méthode Rapide et Massive.*" By this method the patient is brought under the influence of the anæsthetic very rapidly by a frequent renewal of the supply of ether, very little being administered in the second period of the anæsthesia. MM. Marchand and Michaud, of Paris, called particular attention to the importance of giving ether in large quantities at the beginning, so as to shorten the period of agitation as much as possible.

The treatment required in a case of danger from ether anæsthesia is, that necessary for relief of rapid asphyxia. Tracheotomy is highly recommended, but should not be delayed too long. [This would seem to be a favorable opportunity for the employment of O'Dywer's tubes.]

M. Ponset is opposed to the use of ether in combination with other toxic substances. He has seen many grave cases of prolonged anæsthesia resulting from the injection of morphia and atropia twenty minutes before the operation.

Mixed anæsthesia, according to M. Ponset, does not prevent primary syncope nor the laryngeal reflex, and favors tertiary syncope. M. Chalot, of Toulouse, published an article in a recent number of the *Revue de Chirurgie*, in which he recommends ether as the anæsthesia of choice, but not to be employed systematically.

Technique in Abdominal Hysterectomy.—J. W. Taylor advises the following method of treating the stomach: The base of the pedicle is transfixed by three or four pins, the wire passing also through the edge of the parietal peritoneum, but through no other portion of the tissues except the tumor. The wire of the clamp is then passed around just below the pins, and the parietal peritoneum is drawn up around the pedicle in such a way as to be included by the wire, by this means shutting up the peritoneal cavity. This seems to be a very satisfactory method of including the peritoneal cavity, but it does not seem to be in any way practically superior to a method which the writer has long practiced; viz., including and picking up the peritoneum of the pedicle in the sutures by which the abdominal wound is closed, the needle penetrating the peritoneum of the pedicle about half an inch below the wire. The two sections of the peritoneum taken up in this way by inclosing the sutures above and below the pedicle inclose about one half of the pedicle, and the two remaining quarters are caught up at the sides by means of sutures passed through the thickness of the abdominal wall, the suture returning through the same side, the points of the entrance and exit being sufficiently far apart to prevent the danger of cutting through the skin. If the sutures are rightly placed, the peritoneum may by this method be completely wrapped around the stump in such a manner as to fully isolate the peritoneum from the external portion of the pedicle. If, by miscalculation, a small triangular space is left on the upper side of the pedicle, another suture may be passed which will include only the two edges of the parietal peritoneum and the peritoneum of the pedicle. This is allowed to hang out, and can be easily removed when the clamp is removed, or a few days later.

Aërated Milk.—Prof. Barclay first introduced the idea of aërating milk; that is, charging it with CO_2 gas. Paster Macki, a Russian physician, has been using aërated milk for the past few years as a substitute for kefir and kumyss. Some patients find it more agreeable than ordinary milk, and in some instances it agrees better with the stomach. It has no advantages, however, over New Era Kuinyss, in the manufacture of which yeast is not employed, so that there is

no alcholic element present, while a great multitude of foreign germs which are ordinarily present in milk are destroyed by sterilization.

DIGESTIBILITY OF STARCHY FOODS.

RECENT experiments in relation to digestibility of starchy foods, when treated by malt and pancreatic extracts, gave the following results:—

One gram of each of the following starches and meals was boiled and made up to 100 cc. with water. In each case the effect of one cc. of pancreatic essence on the mucilage at 100° F. was noted, a dilute solution of iodine, placed in drops on a white slab, being used as an indicator:—

Indian Corn.—After digesting three hours with the pancreatic essence, still gave a distinct blue with the indicator. Twenty hours' digestion appeared to have no further effect.

Wheat.—Distinct blue after two hours' digestion.

Rice.—Distinct blue after two hours' digestion.

Tapioca.—After half an hour's digestion, gave only a faint green with the indicator.

Arrowroot.—Ceased to give a blue in ten minutes.

Potato.—Ceased to give a blue in ten minutes.

Oatmeal.—Gave a scarcely visible blue after digesting eighty minutes.

Wheat Flour.—After two hours' digestion, gave a very faint blue.

Potato Flour (2 grams).—Ceased to give blue in ten minutes.

Thinking that prolonged boiling might have some effect on the convertibility of starch, some experiments were instituted to test the point. Solutions of arrowroot and corn starches were brought to the boiling point in one case, and in the other boiled for ten minutes. The time required for digestion was, in each case, the same, i. e., the arrowroot ceased to give a blue in ten minutes, and the corn still gave a blue after three hour's digestion. These experiments were repeated with malt extract, and point to the following conclusions: Arrowroot and potato starches are the most readily converted into sugar by the amylolytic ferments. They are, therefore, the most suitable for testing malt and

pancreatic preparations. Arrowroot and potato starches are the best for weak digestions. Chemically there seems to be no difference in digestibility between low priced and high priced arrowroots, nor between the latter and potato starch. Root starches are more digestible than seed starches. So long as the starch granules are burst, further (limited) boiling does not render them more digestible. In further experiments it was found that the addition of either acid or alkali to the pancreatic juice retarded the conversion of starch, but with saliva in the absence of either, the conversion took place in four minutes.

Operation for Strabismus.—E. Jackson (*International Medical Magazine*, February, 1894), in a careful consideration of the question of operations for strabismus, makes the following points:—

No operation should be done so long as other methods of treatment offer any probable chance of relief. The slow development of coördinating power in some children, and the possibilities of change by future development, should prevent early operative interference; and, as a rule, therefore, operation should not be undertaken before the age of five or six years, and at that age complete correction by operation should rarely be attempted. At puberty complete correction of the squint by operation should be undertaken where it has been incompletely corrected or is of low degree. In adult life the existing indications govern the operation. In cases of squint due to ametropia, the latter should be corrected before operation is attempted.

New Test for Bile Pigment in the Urine.—The following method has been devised and used by Henry Roc, in Prof. Senator's clinic. A portion of the urine is poured into the test-tube, which is held inclined. Two to three c. cm. of a solution consisting of ten parts of officinal tincture of iodine mixed with 90 parts of alcohol are then poured in with great care, so that the iodine mixture overlies the urine, but does not mix with it. Almost instantly a grass-green ring will be seen to develop at the point of contact of the two fluids. If no bile pigment is present,

the ring will be either colorless or of a light yellow color. This is said to be the most delicate and reliable test for bile pigment which has yet been proposed.

Effects of Massage on the Blood.

—Dr. J. K. Mitchell, of Philadelphia, recently reported in the *Medical News*, a number of experiments for the purpose of determining the effect of massage upon the blood. He found the number of red blood corpuscles to be enormously increased. The haemoglobin was also increased, but to a less extent. In some cases there was an even greater increase in the white blood corpuscles. Dr. S. Weir Mitchell suggests the explanation previously intimated by Dr. Winternitz, of Vienna, that the increase of corpuscles is due to the bringing of corpuscles into the general circulation which have been previously accumulated in the smaller vessels, of the larger viscera. Dr. Reynolds suggests that the increase may be only relative, and due to the withdrawal of a portion of the fluid elements of the blood into the tissues, as the result of massage. The effects of massage seem to be identical with those of cold bathing and exercise, as shown by Winternitz and others.

Therapeutic Value of Mineral Phosphates.

—Sanson recently reported to the Biological Society of Paris the result of a series of experiments which he recently conducted upon cow's milk for the purpose of determining the effect upon milk of mineral phosphates administered with the food. Phosphate of sodium was administered in doses of 10-30 grams. A sample of each morning's milk was analyzed, with the result of showing constantly present a larger proportion of phosphoric acid than normal. The amount was not increased by a dose of phosphate of sodium exceeding 22 grams.

The author states that his experiments showed that the phosphoric acid eliminated in milk was not combined with the casein, but found simply in a state of solution in the serum. This fact has an important bearing upon the therapeutic value of mineral phosphates. The writer has never believed it possible that these phosphates are assimilated and used as food. They may in some instances serve

a useful purpose as an aid to digestion, but it is impossible that these mineral phosphates can be assimilated. Considering the subject from a therapeutic point of view alone, these experiments by Dr. Sanson seem clearly to demonstrate the erroneous character of theories heretofore held respecting this subject.

Aseptic Midwifery.—Dr. Joseph Price has recently called attention to the remarkable statistics of the Preston Retreat for Women, an institution of which he has charge. Dr. Price states that there have been in this institution, 1313 consecutive cases of confinement without death from any cause. Dr. Price very well remarks that no one should have anything to do with obstetrical cases "who has not more pride of personal cleanliness and cleanliness of environment than a stable boy, dirty in all the term applies, morally and personally."

Bassini's Method for Radical Cure of Hernia.—This method, which has recently become quite popular in this country, consists essentially in the following procedure: The sac is carefully dissected out, ligated, the hernia reduced, and the sac ligated and cut off as close as possible so that it will retract into the abdominal cavity. The internal oblique and transversalis muscles, are then stitched back to Poupart's ligament, the cord being drawn aside in the meantime. The cord is then laid over these muscles, and a roof and a new canal formed by stitching the skin to the superficial fascia over the cord. Some operators make three layers of sutures, placing the cord between the layers of the superficial and the deep fascia.

Epistaxis in Children.—M. Verneuil recently read a very interesting communication before the French Academy of Medicine upon the subject of epistaxis in children. (*La Loire Medicale.*) Prof. Verneuil holds that nosebleed in children is due, in a large number of cases, to hepatic disturbance of some sort, especially such conditions as are present in the rheumatic diathesis. He remarks as follows:—

"The practice has been to stuff these pale, anaemic children with tonics of all

sorts, but this treatment, by predisposing to congestions, is diametrically the opposite of the treatment required by these patients. That which is first of all necessary in these cases, is the alkalines, a vegetarian regimen, and cold douches over the liver. This treatment, which I employed in the case of a young man of seventeen years, has given excellent results; the hemorrhages have disappeared."

The Endoscope in Urethral Stricture.—Dr. Mc Munn, in a recent article in the *British Medical Journal*, calls attention to the value of the endoscopic tube as a means of aiding the introduction of the filiform bougie in extreme cases of urethral stricture. Passing the tube down through the stricture, the aperture of the stricture is widened out by the stretching of the canal over the end of the tube, or brought into view by the change in the direction of the canal, so that the filiform instrument may be easily introduced.

Papoid in Diphtheria.—Dr. J. Lewis Smith, of New York, recommends papoid in diphtheria, after an experience in sixty-three cases. He first cleansed the surface with a spray of hydrogen peroxide, and then applied the papoid in the form of a powder.

Temporary Enlargement of the Pelvis.—Prof. Pinard, of Paris, in a recent report of the results obtained at the Baudelocque Lying-in Hospital, in the employment of temporary enlargement of the pelvis as a substitute for forceps, turning, induced labor, and in most cases the Cæsarean operation, when the head of the foetus is too large for the diameter of the pelvis, asserts that he has not, in a single instance, met with the least accident during the division and enlargement of the pelvis, and that consolidation of the pelvis after the operation took place so perfectly that his patients were able to get out of bed and walk with ease within twenty days, on an average. The comparative results as regards mortality, are as follows:—

In 64 cases of induced labor for malformation of the pelvis, two women and 34 infants died, making 36 deaths, with 92 lives saved.

In 38 cases of temporary enlargement of the pelvis, two women and four children died, making 70 lives saved, with 6 deaths, showing the immense superiority of the operation of temporary enlargement of the pelvis as regards the saving of life, and of course obviation of the necessity of the horrible operation of embryotomy.

The following method was pursued : The finger was placed at the left of the clitoris, low down, pressing the left root of the clitoris downward until the apex of the pubic arch is felt. This point marks the lower end of the incision, which is made of whatever length is necessary. When the white præsymphytic tissues are laid bare, the fibers of the middle suspensory ligaments of the clitoris are cut transversely, the lower flap of this incision is turned down, keeping close to the symphysis until the lower edge of the arcuatum is clearly brought into view. By means of the finger placed beneath the arch of the pubes the recti are separated, the periosteum is turned up by means of a nail or a blunt instrument, until the opening under the pubes is made continuous with the space opened in front. Grasping the symphysis with a blunt steel-blade, shaped like a grooved hook, the symphysis is divided. The division should be complete. The degree of separation depends upon the amount of pelvic contraction. The operation should not be undertaken unless it has previously been determined by careful estimate that an enlargement of $2\frac{1}{3}$ inches will allow the head to pass. A greater enlargement than this should never be undertaken. In cases in which a greater enlargement would be required, Porro's operation should be performed. In case natural labor is prevented by ankylosis of the coccyx, coccycotomy should be performed.

Boracic Acid in Constipation.—Excellent results may be obtained in many cases of constipation by the application of powdered boracic acid to the rectal mucous membrane. The writer's mode of application is as follows :—

The ordinary rectal speculum having been introduced, half a dram of powdered boracic acid, either pure or mixed with an equal quantity of starch, is introduced by means of a small spatula ; a soft mass of cotton is then grasped by a pair of dress-

ing forceps and used as a plunger to carry the boracic acid into the bowel. Applications of this sort will often secure an evacuation of the bowels in the course of an hour or two. The best time for the application is before breakfast. The applications are also useful made in the afternoon or evening, especially in very chronic cases. Cases in which this method is found most useful are those in which constipation is due to loss of sensibility in the nerves of the rectum, in consequence of impairment of the normal reflexes by which nature calls for an evacuation of the bowels.

This remedy will be found very valuable in cases of leucorrhœa of the rectum. In cases in which irritability exists, the boracic acid must be mixed with twice the quantity of powdered starch, or an equal quantity of sub-carbonate of bismuth.

For Corns.—Mix the following : Lactic acid and salicylic acid, each one part, with ordinary collodion, eight parts. Apply to a corn or wart daily until a thick layer is formed. When this suppurates, some days later, the corn or wart will come away with it.

Atropia as a Hæmostatic.—Several authorities have recently recommended atropia as a hæmostatic in all forms of hemorrhage due to a relaxed condition of the bowels, as in metrorrhagia, and certain forms of epistaxis. The dose is one hundredth of a grain administered hypodermically, and repeated every twenty or thirty minutes until the desired effect is produced.

Supra-pubic Drainage of the Male Bladder.—Hunter Mc Quire reports four cases of tuberculosis of the bladder in men, treated by supra-pubic drainage. One died from exhaustion following the operation, another from general tuberculosis ; two others recovered.

New Sign of Typhoid Fever.—Dr. Filipowitch, of Odessa, has recently called attention to the fact that in typhoid fever the palm of the hand and the sole of the foot present a calloused appearance with a yellowish coloration, instead of the rosy appearance of health or the bluish appearance of cyanosis.

BACTERIOLOGICAL NOTES.

[THE notes appearing in this department are abstracts or translations prepared expressly for MODERN MEDICINE AND BACTERIOLOGICAL REVIEW, from original sources.]

Protozoa and Spirilla in Drinking Water.—These organisms are seldom encountered in ordinary bacteriological examinations for the reason that the conditions necessary for the growth of bacteria, yeasts, and molds, are not such as favor the development of protozoa and spirilla. The following method has been proposed by Beyerinck. The principle of the method is drawn from the fact that these organisms develop at a certain level in the nutrient fluid. The following is the method, as given by the *British Medical Journal* : —

“ Beyerinck (*Centralblatt für Bakteriologie*, xv B., No. 1), after commenting on the fact that the conditions of life of most protozoa and spirilla differ considerably from those necessary to the growth of bacteria, yeasts, and molds, so that the former organisms are but seldom shown by the ordinary bacteriological methods, recommends a special method for their study. This method he recently described, and advocated for the study of bacteria, in the same periodical (Bd. xiv, 1893, p. 827). The principle of the method is that the organisms develop at a certain level in the (fluid) nutrient medium ('Bakterienniveau'), which varies in accordance with the conditions of nutrition, as will shortly be apparent. The method, as originally described, is as follows: ‘An ordinary brown bean is placed at the bottom of a test tube, which is then almost filled with distilled water, and kept upright at the temperature of the room, as free from currents of air as possible. Water, with the oxygen it contains, is taken up by the bean, and certain soluble substances (including sugar and phosphates) diffuse from the latter into the water, serving as nutriment for bacteria. In the first place, the organisms upon the surface of the bean develop, producing a cloudiness over its surface. This cloud of developing organisms soon rises, however, owing to the rapid removal of oxygen from the neighborhood of the bean. The level attained by the dense mass depends on the time which has elapsed since the experiment began, and upon the temperature. In

the case now quoted, in forty-eight hours, at 20° C., the collection of organisms was seen at a point 2 to 3 cm. above the bean, as a thin opaque layer (the ‘bacterial level’), which appeared as a sharp white line when viewed from the side. Above and below this, the water was clear. The “level” is that point at which the oxygen from above and the nutrient stream from below meet, and afford suitable conditions of growth for the bacteria. In place of the bean, sterilized nutrient agar or galatine can be used. This, after setting, is inoculated with the material to be examined, and sterilized water is then poured over it. The water may be thickened with agar (1 per cent). The bacterial level forms, as before, with certain distinctions.’ The special advantage of this method is that it realizes all possible conditions in respect of concentration of nutrient material and oxygen. Hence it is very suitable for the study of protozoa and spirilla. Some of the water to be examined is poured into a tube, at the bottom of which is the solid gelatine or agar. A ‘level’ presently forms, containing various bacteria. The water above this is suitable for the development of protozoa, owing to a combination of the following conditions: a low proportion of organic material (which has been largely filtered off at the bacterial level), a high proportion of bacteria (which serves as food), and variations within wide limits of the amount of contained oxygen. In samples of this water the protozoa can be well studied. Presently the surface of the water becomes covered with a thick layer of bacteria and monads, and the entry of oxygen is consequently much hindered. Spirilla now develop forming a level.”

Tuberculosis and Bedbugs.—In an article published in the *Revue de la Tuberculose*, Dr. Dewevere calls attention to the fact that tuberculosis may be communicated by bedbugs. A young man slept in a bed which had been previously occupied by a consumptive, and contracted the disease. It was afterward found that he had been frequently bitten by bedbugs which had evidently infested the bed during its use by its previous occupant. Six per cent of these insects captured from the bed contained tubercle bacilli. Guinea-pigs inoculated with cult-

ures made from these bugs died of tuberculosis. Some bugs which had been brought in contact with tubercular sputa, several weeks afterward gave rise to active cultures. The bugs probably derived their germs from the sputa or from infected linen. It is entirely possible that fleas may operate in the same way. A knowledge of this fact ought to give rise to an active effort for the extirmination of these vermin, especially in countries where bedbugs are supposed, in some way, to contribute to health.

Phagocytosis.—The views of Metchnikoff respecting phagocytosis have recently been confirmed by San Arelli, who experimented upon rabbits by introducing under the skin, collodion tubes containing anthrax spores. The lymph gradually permeates the collodion tubes, bathing the spores and giving rise to a luxuriant growth of bacilli possessed of great virulence. After a short time, however, the growth ceases and the bacilli degenerate and die.

Soap as a Germicide.—During the cholera epidemic, experiments were made for the purpose of discovering the best germicide for sterilizing the water to be used for bathing. It was found that ordinary toilet soap in the proportion 2.5 to 1000 parts, will kill the cholera bacillus in ten or fifteen minutes. Soaps containing salicylic acid and carbonic acid are found to give no better results than ordinary toilet soap. A bath of thirty gallons of water would require a little more than one half pound of soap. A gallon of water would require two and a half drams, or a little more than one fourth of an ounce.

Estimation of Bacteria.—The following plan has been suggested by Fermi, for estimating the number of microbes present in such solid materials as faeces, butter, cheese, and decomposing tissues: A straight platinum needle is marked at a little distance from its point by means of a file. It is then sterilized and dipped into the substance of the material investigated as far as the mark, then withdrawn and dipped into the solid gelatine to the mark, and in ten different points. Three tubes are thus inoculated, the gelatine is

liquefied and poured into dishes in the usual manner, the colonies are counted and the average of the figures obtained. It is sufficient to count the colonies in five separate fields. The following points must be carefully noted in the employment of this method:—

1. The needle must be straight, smooth, and clean.
 2. It must be thoroughly cooled after it has been sterilized.
 3. It should be inserted the same depth in every case.
 4. Each tube must contain precisely the same quantity of gelatine and have the same quality and consistence.
 5. The dishes employed must have the same diameter.
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Sero-therapy in Tetanus.—Remesoff and Fedoroff recently reported in the *Centralblatt für Bakteriologie*, a case of tetanus treated successfully by means of the serum of an immunized animal. The serum used was estimated to have the curative value of 1-300,000. The symptoms of the disease were already marked when the first injection of 50 c.c.m. was made. The serum was obtained from a dog which had been rendered immune to tetanus. The next day after the first injection the patient was already improved, and the improvement continued until the fourteenth day, when he was discharged well.

The authors summarize the facts which have been developed by experience with this method, up to the present time, as follows:—

1. The duration of this disorder is decidedly diminished by sero-therapy.
 2. The temperature is reduced.
 3. Sleep is restored.
 4. The attacks of spasm grow less severe and more infrequent.
 5. The frequency of the pulse is diminished.
 6. Great improvement in the general condition is induced.
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Scarlet Fever from Milk.—Dr. Chalmers, of Glasgow, recently reported an outbreak of scarlet fever which was traced to a dairy, one of the milk boys of which had suffered from the disease. It was not proven that the cows had suffered any malady to which scarlet fever could be traced.

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THE VALUE OF PROF. KOCH'S DISCOVERY.

SOME superficial minds in the medical profession, since the failure of Prof. Koch's tuberculin to operate as an absolute panacea in pulmonary consumption and other forms of tubercular disease, have thought it not improper to denounce the Professor as an ignoramus, a theorist, a sensationalist; and, indeed, stronger and less flattering terms have been used. Certainly those who indulge in sneering references in relation to the man who has done so much for the medical profession and for the world at large as has Prof. Koch, must be either unacquainted with the work of this indefatigable investigator or incapable of appreciating scientific work of the highest value. Although tuberculin did not prove to be the long-sought panacea for consumption which Prof. Koch's experiments upon guinea pigs gave flattering prospects that it might be, it has, nevertheless, proved to be an invaluable agent, if not in curing consumption, at least in detecting it. This is well shown in the fact that the State of New York has recently passed a law authorizing the use of tuberculin as a means of determining the presence or non-presence of the tuberculous process in cows.

As a test of tuberculosis in animals tuberculin has been very thoroughly tried, and although it has not proved to

be all that it was expected to be as a curative agent, it has in no respect fallen short of the sanguine expectations concerning it as a means of diagnosis. It must be regarded as the most positive and absolute of all known means of diagnosis in tubercular disease. Two or three drops of tuberculin injected beneath the skin of a cow, if the animal is tuberculous, will, within a few hours, give rise to an elevation of temperature of several degrees, which does not occur if the animal is free from this disease. In numerous instances in which animals thus tested have been shown to be tuberculous by the tuberculin test, but in which the test was disputed, a post-mortem examination has shown that if there were not large tuberculous masses in the lungs (which were sometimes found to be free from the disease), there were to be found somewhere in the animal, tubercular deposits, — in the large lymphatic glands, in the bones, or a tuberculous infection beginning in some viscus, if not sufficient to give rise to any marked disturbance of nutrition or other prominent symptom. The method has held its own against all criticism, and has borne the test of most thorough-going and crucial investigations. This alone would be a sufficient reward to Prof. Koch for his arduous labors, and should entitle him to the respect and gratitude of all intelligent men.

But it is not altogether impossible that tuberculin or some substance derived from it may yet prove to be an invaluable agent in the treatment of pulmonary disease. The writer is able to record one case of bone tuberculosis, which, after several years' treatment, he had abandoned as utterly hopeless, and, as a last resort, administered tuberculin. The reaction was so tremendous that all hope was abandoned, and the patient was sent to her home in a Western State to die. But, a few months later, the mother reported the young lady as in perfectly

sound health. The diseased portion of the bone had entirely separated, in the active inflammatory process which was set up by the tuberculin, leaving only sound tissue behind, and the sloughing tissues carried away with them all the tuberculous microbes present, so that the abscess became simply an ordinary suppurating wound, and very soon healed. Let us not forget to give honor to whom honor is due.

HOUSE HEREDITY.

NEARLY twenty years ago the writer was consulted by an elderly gentlemen from Canada, who, in explaining his case, remarked, "Doctor, I do not know what your opinion is respecting my case, but my opinion is that I have inherited consumption from my wife. My wife died ten years ago from consumption, and I have not been well since." Fortunately the poor man was not suffering from consumption, although he had a serious pulmonary disorder which gave occasion to a chronic and very troublesome cough. The fact that he was suffering from a disease of the lungs, which, to his unscientific observation closely resembled the disease from which his wife had suffered and died, led him to think there must be some connection between his malady and that of his wife—and there might have been, although the relation would be more scientifically expressed by the term "contagion" than that of heredity, however, considering the ordinary use of the term "inherit," the application was not such a bad one after all. The poor man's wife had died of a lung disease, and after her death, he found himself suffering from what seemed to be a similar malady, so it was very natural for him to suppose that it had been bequeathed to him by his dead companion.

In a similar sense, houses may be said to inherit disorders of various sorts from

their occupants. In this way houses become infected with tuberculosis. A case was recently reported in a French journal, in which several children died one after another of a tubercular disease without any apparent cause. An investigation showed that the house into which the family had recently moved had previously been occupied by a family, one member of which had died of consumption. The house had not been disinfected, and as the children spent most of their time in the room occupied by the invalid, there was every opportunity for the operation of contagion.

Another case recently reported illustrates the same principle. A man living in a boarding house of the lower class, in Paris, after a lingering illness died of consumption. The bed which he occupied was taken by another man, who, after a few weeks, also became affected by the same disease and subsequently died. Investigation showed that, in this case, the bed was infested with bed-bugs, which had, by subsisting upon the dried sputa of the patient, become infected with the disease, and, by biting the patient, had inoculated him with the specific microbe of consumption, thus leading to the development of the disease in a general and acute form leading to a speedy death.

Many similar instances might be reported. Sometimes the morbid condition which exists in a house may be due, not immediately to the previous occupant, but to local conditions, the existence of which may not be easily recognized, but would at once become apparent if one should take the trouble to investigate the pedigree or heredity of the house by inquiring after the health of its previous occupants.

A remarkable instance illustrating this occurred in the writer's experience a dozen or more years ago. A gentleman who had recently moved into a fine, large brick residence called our attention to

the fact that when moving into the house, he found written in large letters upon the walls of nearly every room, the words, "This is the malaria house. Look out for malaria," and similar expressions. Within five months the gentleman himself was stricken with malarial fever in a pernicious form, and died within a few days. As soon as the writer learned of the circumstance referred to, which was not until after the beginning of the patient's illness, he insisted at once upon moving the patient to another and more salubrious locality; but it was too late, as the mischievous work of the disease had already proceeded so far as to produce irreparable damage to the brain.

In the case last mentioned, the house, a large roomy one, was situated upon a hill in a very slight place, but unfortunately within forty rods of a mill pond, the water of which at certain seasons of the year became low and stagnant, exposing many acres of slime-covered soil, a most effective breeding place for malaria. Under ordinary circumstances even this unfortunate condition gave rise to no inconvenience, as the pond was situated southeast of the house, while the prevailing wind was from the southwest. At the time when the fatal illness occurred, the southeast wind had been blowing steadily for two or three weeks, the water in the pond being at the time very low. This was unquestionably the cause of the gentleman's illness and death. The germs of typhoid fever not infrequently cling to a residence for many years, so that deaths occur in one family after another which successively occupy the house, each succeeding diseased family being often in ignorance of the previous fatalities. When a well once becomes infected with typhoid fever germs through the seepage from an adjacent privy vault, cleaning out the well amounts to nothing, as it would generally be necessary to clean out a space bounded at the surface by a circle with a diameter three times the depth of

a well extending down into the earth to the bottom of the well, or at least below the water level. Such a mode of cleaning a well is of course impracticable. The only thing to be done with a well which has become infected with typhoid fever germs is to close it up. It is impossible to have a well upon such premises, or even near by, which will not be in danger of similar infection.

A very forcible illustration of the necessity of inquiring into the previous history of a house before taking possession of it was recently furnished by a Philadelphia physician. In making a careful study of the causes of death in the older and principal wards of the city he found that the deaths from consumption were largely confined to a certain number of houses. These houses were for the most part arranged in groups, showing that the disease had extended from one house to adjacent houses.

Apropos of this subject, the writer many years ago suggested that the health officer of every town should keep a register in which should be represented every house in the town or city, in connection with which there should be kept a complete sanitary history of the building, which should show every case of sickness from whatever cause, whether chronic or acute, and all cases of death, with the causes of death. A person desirous of purchasing or renting a dwelling, could, by consulting this register, learn the exact history of any house which might be under consideration, and might obtain information the value of which, in the saving of sickness and life, could scarcely be estimated.

DR. ERNEST HART ON TEA.

DR. ERNEST HART, editor of the *British Medical Journal*, recently delivered a lecture on the subject of tea, coffee, and cocoa, in which he gave an interesting history of the introduction and

a description of the production of the different varieties of tea and coffee. The special point to which we call attention is Mr. Hart's statements respecting the question of tannin in tea. He gave the result of an extended series of experiments which quite contradicts the current views upon this subject. The idea has been quite generally propagated that by the long contact of water with tea, an excessive amount of tannin is extracted, which may be avoided by the infusion of the tea for only a short time, as ten or fifteen minutes. It has been found by actual experiment that after the exposure of tea to the action of hot water ten or fifteen minutes, little or no tannin can be extracted. The extract obtained after the first fifteen minutes has a disagreeable flavor. But, contrary to the popular notion, this extract does not contain any excess of tannin. Tannin is an exceedingly soluble substance, being so highly soluble, in fact, that its solution begins the instant the tea leaves come in contact with the water. The pale infusions of tea made in three minutes are found to contain a large proportion of tannin.

Dr. Hart entirely agrees with Sir William Roberts in the view that the ill effects of tea drinking is due to theine and the volatile extractives of the tea leaf, and not to tannin. It is also stated by the lecturer to be an error to suppose that common teas contain a greater amount of tannin than the so-called choice varieties. The very opposite of this is true in many cases. The time cannot be far distant when the evils resulting from the use of tea will be so generally recognized that, in medical circles at least, tea and its congener, coffee, will be universally condemned.

By a recent action, the New York Board of Health requires the registration of all patients suffering from tuberculosis.

TO RELIEVE THIRST AFTER OVARIOTOMY.

THE necessity for withholding liquids as a means of preventing nausea and vomiting after ovariotomy, especially in grave cases, usually gives rise to intense thirst on the part of the patient. This is sometimes so extreme as to render the patient almost desperate. In ordinary cases the patient may be made thoroughly comfortable by administering, every now and then, a small sip of very hot water. Hot water relieves thirst much better than cold water or bits of ice. In cases in which it is important to stimulate drainage of the abdominal cavity through the intestines by absorption, it is, of course, important to withhold fluids to as great an extent as possible for the first two or three days following the operation; but in cases in which this consideration is not an important one, the intense thirst of the patient may be relieved by means of warm enemata.

It is the unvarying custom of the writer to administer a large enema within twelve hours after the operation, chiefly for the purpose of placing the intestines by stimulating peristaltic action, by means of which the intestine will restore itself as nearly as possible to a normal position and condition in the abdomen, and also for the purpose of moving the viscera, thus preventing obstruction by adhesion of the intestine in a folded or cramped condition. The advantages of this method, we think, are well shown in our statistics, which present but a single case of intestinal obstruction following laparotomy in nearly 350 cases. In the use of enemata in this manner a certain amount of water is always left behind, which suffices to relieve the patient's thirst, so that it is only necessary to bathe the patient's mouth now and then with a swab to remove any considerable degree of discomfort arising from the withholding of liquids.

THE importance of the exercise of due vigilance to prevent contagion in public institutions is well illustrated by a report recently made by Dr. McCracken, of West Troy, N. Y., who traced 126 cases of ringworm of the scalp in the inmates of an institution under his care, to the use of a common hair-clipper. Thorough disinfection of the hair-clipper would, of course, have prevented this disastrous result.

Tight-lacing and Gallstones.—

Prof. Marchand, of Marburg, a few years ago called attention, in the *Deutsche Medicinische Wochenschrift*, to the fact that gallstones and tight-lacing are frequent coincidents. According to Dr. Marchand, the relation of tight-lacing to the development of gallstones is rendered very clear by noticing the situation of the gall ducts in the liver deformed by tight-lacing. The furrow caused by lacing runs directly across the right lobe of the liver, as the result of which there is a tendency to atrophy of the gall bladder. When tight-lacing has been practiced to an extreme degree, an artificial fissure is formed in the liver, giving rise to what is termed the "lacing-lobe," which carries with it the gall bladder. The constricted portion of the liver is found to be just at the point of junction of the gall bladder with its duct. In these cases, according to Prof. Marchand, it is common to find the gall bladder greatly distended, extending far beyond the border of the liver, and frequently an examination made post-mortem reveals the presence of gallstones.

Stagnation of the bile is well known to be one of the most important causes of the formation of gallstones. A change in the composition of the bile, from catarrh resulting from congestion of the mucous membrane and the thickening of the bile due to failure of the gall bladder to completely evacuate itself, gives rise to the formation of small masses which

serve as nuclei for calculi; hence anything which obstructs the free outflow of bile through the cystic duct, must favor the formation of gallstones.

Marchand is also of the opinion that many cases of cancer of the liver should be attributed to tight-lacing. It is only a few years since Langenbuch was obliged to open an abdomen to remove a "lacing lobe" of the liver which had been so completely separated from the rest of the organ as to cause its death, rendering its removal necessary.

In view of such facts as these, is it not the duty of every physician to take special pains to warn his patients against the evil effect of this pernicious practice? Few women are conscious of the fact that they are injuring themselves by tight-lacing, and yet at least ninety-nine out of every hundred women in the United States are addicted to this evil practice in some degree.

Diet for Typhoid Fever.— Perhaps the best of all diets in typhoid fever is kumyss. The lactic acid which it contains will prevent the growth of the typhoid bacillus. The finely divided state of the casein prevents the formation of curds. The carbonic acid is soothing to the irritated condition of the mucous membrane; the taste is grateful to the patient; the acidity stimulates the secretion of the gastric juice, and thus aids digestion,—in fact it seems to fulfill all the requirements of a food specially suited to the condition of a typhoid patient or a patient suffering from any serious febrile disorder.

WE are glad to note the grand work which our versatile friend, Prof. Chas. H. Stowell, is doing for the profession in the publication of his *National Medical Review*. No journal comes to our table which contains so large a number of racy, sensible editorials as does Dr. Stowell's. The journal ought to be found on the table of every physician.

REVIEWS.

Abstract of Two Articles Treating of Progress in Midwifery.—By Hunter Robb, M. D., Associate in Gynecology, Johns Hopkins University, Baltimore.

This paper is an abstract of two articles which recently appeared, one in the *Münchener Medicinische Wochenschrift*, by Dr. Döderlein, of Leipzig, and the other in the *Berliner Klinischer Wochenschrift*, by Prof. Veit.

The paper of Dr. Döderlein was entitled "Progress in Midwifery;" that of Prof. Veit, "The Principles of Asepsis in Obstetrics." Döderlein holds, with Hegar, that labor should be allowed to take place naturally whenever possible, since this course insures a better prognosis for the puerperal period. Hegar has shown that in Bavaria, between the years 1870 and 1888, the frequency of obstetric operations rose from four to seven per cent. The principal causes assigned, were rickets, disproportionately large children, and weakness of the diaphragm and abdominal muscles in civilized women. Puerperal fever is held to be due to infection of wounds by pathogenic organisms. Döderlein showed by inoculation of animals that virulent streptococci existed in 9.2 per cent of all these cases. Döderlein and Burckhardt show that pathological secretions existed in over forty per cent.

The question arising from this study is whether disinfection of the vagina should be practiced. Ahlfeld has proved that disinfection of the vagina does no harm, but it seems not to have been proven that it does any good. Veit says, "I think that an examination per vaginum should only be made where there are indications for it." The general tendency seems to be to leave the woman as much to nature as possible. Veit says that in half his cases he makes no examination per vaginum. The greatest danger is to be feared from

the examining hand. The operator must be sufficiently skilled in making diagnoses to be able to make an examination by external manipulation only. In cases of hemorrhage due to atony of the uterus, the uterus is rubbed externally by Credè's method. If the hemorrhage is due to laceration of the cervix, the tear should be closed up by sutures. Schroeder says it is better to let the woman be delivered in a gutter, and take her chances, than that a hand of doubtful surgical cleanliness should be placed in the vagina. The general conclusion is summed up in the following quotation: "We obstetricians, besides making a diagnosis and treating pathological conditions, have this duty; viz., to see that no pathogenic organisms are carried into the patient from without. The harmful substances which a woman carries internally in the genital canal she can, as a rule, more easily overcome without our interference or our assistance."

The Treatment of Typhoid Fever.

— By Elmer Lee, A. M., M. D., Chicago, Ill.

Dr. Lee strikes the root of the matter as relates to the rational treatment of typhoid fever in the following words: "Without waiting for development of the symptoms of typhoid fever, the very first proposition is to make the patient surgically clean, which means the free and abundant use of water internally first, and externally afterward. The bowels are drenched and cleansed by a copious douche of hot, soapy water, made to pass into and out of the lower bowel until the contents are cleared away, and the returning water comes back as clear as before it entered. The relief to the sick person after such an ablution is a delight to the physician and of greatest comfort to the patient. "It seems so reasonable," they will say; and in practice it is just as good as they say. Fears were formerly entertained by me, as they are to-day by some of my contemporaries, that some-

thing would be burst by running a large volume of water into the bowels of persons sick with typhoid fever. No harm has ever been done, however, and neither is it likely to be so caused. Several hundred cases have been so deluged by me with large quantities of water, and in no instance has the result failed to be beneficial. The fear of doing harm may be entirely and forever dismissed."

We can heartily endorse the method suggested by Dr. Lee, having employed it for the last eighteen years with a very high degree of success. In conjunction with hydropathic measures for the reduction of temperature, the mortality rate in cases treated by this plan by the writer and his colleagues has been less than three per cent in the treatment of more than 200 cases. In one epidemic of more than forty cases every patient recovered. Dr. Lee employs peroxide of hydrogen (Marchand's) or hydrozone internally, and believes it to be a valuable remedy in this disease. No other internal medication is found necessary.

The Interrupted High-voltage Primary or Mixed Current.—By Geo. J. Engelmann, M. D., St. Louis.

In this little paper the author, who has made many valuable contributions to electro-therapeutics, describes a current which is obtained by the interruption of the galvanic flow passing through the secondary coil of a faradic apparatus, and taken from the terminals of the secondary coil used as a primary, and possessing higher voltage and greater resistance than the ordinary primary in medical induction instruments. In obtaining this current the author states that any galvanic battery may be used. One pole is connected with the interruptor (Dr. Engelmann's new Independent Interruptor), and through this to one of the terminals of the secondary coil of the Faradic apparatus. The other pole of the galvanic battery is connected directly

with the remaining terminal of the secondary coil, and with these same two terminals the rheophores carrying electrodes are connected. The physiological effects of this current, the writer states, are peculiar, differing from every other form of electrical current in use, the current combining as it were "the quantity and the chemic action of the galvanic with the voltage and mechanical effects of the faradic." A variety of effects may be produced by using currents of different intensities and different coils, but the chief value of the current is said to be that of the muscle-contracting current acting upon the muscle in a very powerful manner. The effects of this current seem to be very similar to those of the fluctuating current devised by Piffard, which is obtained by connecting an ordinary coil and interruptor in shunt with a galvanic current which is, at the same time, in use.

The Works of Justine Siegemundin, the Midwife.—By Hunter Robb, M. D., Associate in Gynecology, Baltimore.

This interesting paper is an abstract of a German work published in Berlin, in the year 1756, consisting of the biography and writings of Justine Siegemundin, the most celebrated of the German midwives of the eighteenth century. Altogether, this book seems to have contained a vast amount of sensible advice, and to have anticipated, to a wonderful degree, the so-called modern methods in obstetrics. Justine, it appears, was quite able to make a diagnosis of the position of the uterus by external examination, a thing which a good many physicians even at the present day are not able to do. One is truly surprised in reading this abstract of so old a book to find that so large a proportion of the knowledge which has been supposed to be new in obstetrics is really but a more scientific statement of facts which have been known for a hundred years or more.

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PUBLISHERS' DEPARTMENT.

THE St. Louis *Clinique* has passed into the hands of Dr. Emory Lanphear, Professor of Surgery in the College of Physicians and Surgeons. Dr. Lanphear will conduct the journal in the interests of that school, and of the medical profession of the West.

PHYSICIANS who are looking for a place to which to send their patients for the summer, will do well to note the advertisement of the Battle Creek Sanitarium. This institution is exactly what it is represented to be. Physicians from all over the country are sending their patients to this establishment, and are speaking the highest words of praise in its favor. It differs from many other sanitaria in the fact that patients visiting this institution are not treated in a routine way, but have their cases carefully studied and investigated by the aid of all modern means of diagnosis.

THE publishers are glad to note the appreciation and favor which is accorded this journal by the profession, and especially by those members of the profession who are endeavoring to keep pace with the rapid advance of modern medical science. Although now in its third year only, MODERN MEDICINE has reached a circulation which is exceeded by less than half a dozen medical journals in the United States. This journal is devoted to the interests of no business firm or institution. Its prime and only object is to promote rational medicine by bringing to the notice of the profession the results of the most recent researches in this and other countries.

UTERO-OVARIAN SEDATIVE.—Dr. Chas. Kelly Gardner reports the following case:—

"Mrs. W., aged 44 years, and approaching the menopause; very anæmic, thin, and of a nervous temperament; much anorexia at times; habitually constipated; complains often of headache and palpitation, with frequent but scanty micturition; menstruation very irregular, returning every three to five weeks, and lasting from two to four days; flow small in amount and nearly colorless; attended with violent pains in the lumbar region, groin, with general tenderness over the hypogastric region; no organic lesion of the heart, simply functional as a result of other lesions.

"Upon examination, I detected retroversion of the uterus of the second degree, and a profuse leucorrhœa. Had previously almost exhausted the *materia medica* in seeking a remedy for her relief; had given Hayden's viburnum comp., aletris cordial, fluid extract viburnum prunifolium, cannabis indicæ, etc. As a *dernier resort*, I ordered Liquor Sedans (Parke Davis & Co.), one drachm four times a day, to be continued during menstrual period; Fowler's solution with bromides; and an injection for the leucorrhœa; also placed a Thomas' retroversion pessary. Saw her four days later; met

me with a smile and remarked the 'new medicine' was going to cure her. Her improvement has been steady and rapid; appetite good; menstrual epoch unattended with pain; discharge higher colored and more profuse, lasting from five to six days, and more regular than before for years. Leucorrhœal discharge disappeared; does not suffer with palpitation or headaches."

EUROPHEN IN THE TREATMENT OF CHANCROIDS.—Dr. Arthur Strauss, who has recently written an excellent review of the therapeutics of Europhen, speaks as follows with regard to its use in chancroidal affections:—

"In the treatment of soft chancres Europhen has been highly recommended as substitute for iodoform, especially on account of its odorlessness. Rapid healing was observed after its use by Gilbert, Kopp, Mignecco, Eichler; and Mignecco regarded its antiseptic power as greater than that of iodoform. Nolda obtained a cure in six cases; in four in from seven to nine days; in the rest in twelve to fourteen days. In a case of large chancroid one-half of which was treated with iodoform and the other with Europhen, the latter produced more rapid healing than the former, although applied to the worse looking part. Rosenthal prefers Europhen to iodoform on account of odorlessness. Richtmann usually obtained a cure within two weeks. In a comparative trial of aristol and Europhen, healing occurred four days earlier with the latter than with the former, while with a mixture of both these substances, 4 to 5, he secured a cure two days earlier than with Europhen alone. On the ground of six cases Estay concludes that Europhen has as much antiseptic power as iodoform and is a perfect substitute for the latter, and that it is preferable on account of its caustic action due to the separation of iodine, its agreeable odor, greater lightness, non-toxic character, and greater adhesive power. Under application of the powder, a cure is effected within ten days. Its freedom from odor and irritation is praised by Oeffelein and Neuberger, whose experience is confirmed by Rosenthal. To prevent adhesion of the powder and the formation of crusts, which when removed are apt to produce bleeding, the latter advises that one or two drops of olive oil be dropped upon the powder."

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Fig. XVII—Dorsal Position.

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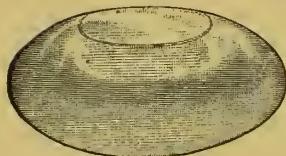
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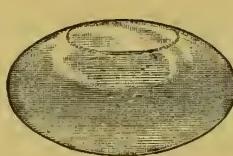
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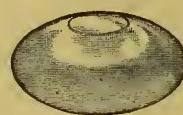
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MODERN MEDICINE AND BACTERIOLOGICAL REVIEW.

Bulletin of the Sanitarium Hospital and Laboratory of Hygiene.
SANITARIUM, BATTLE CREEK, MICH.

Edited by

J. H. Kellogg M.D.

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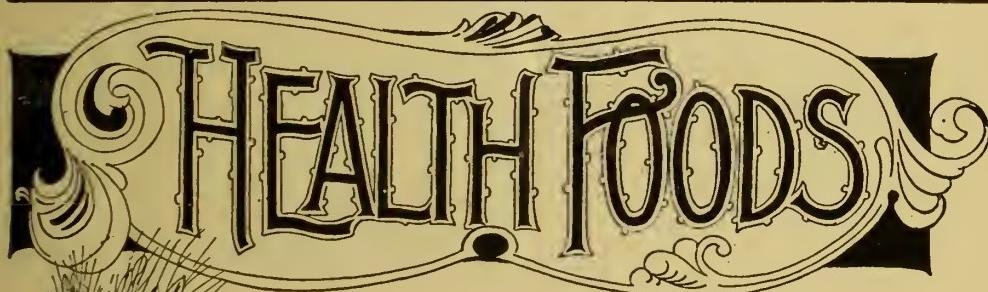
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5.30	5.11	9.26	3.25	7.25	7.47							c. Charlotte.	11.14	11.28	9.07	8.60	4.38	12.58					
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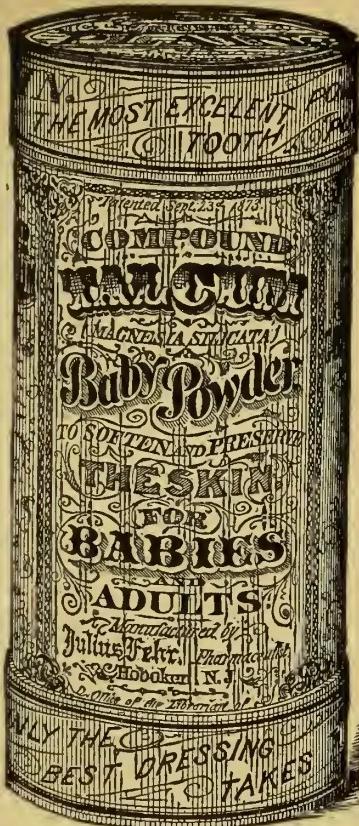
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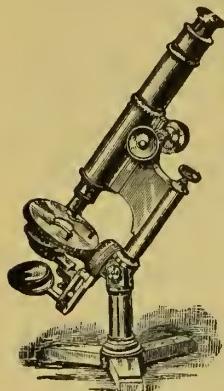
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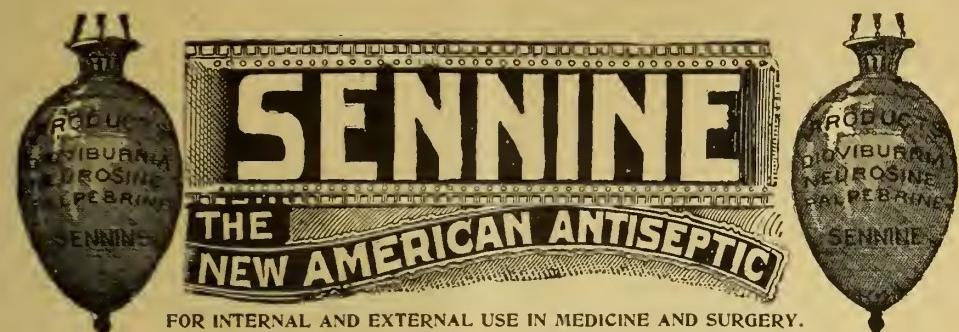
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Formula.—Every ounce contains $\frac{1}{4}$ drachm each of the fluid extracts: Viburnum Prunifolium, Viburnum Opulus, Dioscorea Villosa, Aletris Farinosa, Helonias Diocia, Mitchella Repens, Caulophyllum Thalictroides, Scutellaria Lateriflora.

Dose.—For adults, a dessertspoonful to a tablespoonful three times a day, after meals. In urgent cases, where there is much pain, dose may be given every hour or two, always in hot water.

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L. Ch. Boisliniere, M. D., Prof. of Obstetrics, St. Louis Medical College.

St. Louis, June 18, 1888.

I have given DIOVIBURNIA a fair trial, and found it useful as a uterine tonic and antispasmodic, relieving the pains of dysmenorrhœa, and regulating the uterine functions. I feel authorized to give this recommendation of DIOVIBURNIA, as it is neither a patented nor a secret medicine.

L. Ch. BOISLINIERE, M. D.

From John B. Johnson, Professor of the Principles and Practice of Medicine, St. Louis Medical College.

St. Louis, June 20, 1888.

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well known to all physicians, and therefore have no relation to quack remedies. I have employed this medicine in cases of dysmenorrhœa, suppression of the menstrua, and in excessive leucorrhœa, and have been much pleased with its use. I do not think its claims (as set forth in the circular accompanying it) to be at all excessive. I recommend its trial, believing it will give satisfaction. Respectfully,

JOHN B. JOHNSON.

H. Tuholse, M. D., Professor Clinical Surgery and Surgical Pathology, Missouri Medical College, also Post-Graduate School of St. Louis.

St. Louis, June 23, 1888.

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BACTERIOLOGICAL REVIEW.

VOL. IV.

BATTLE CREEK, MICH., U. S. A., AUGUST, 1894.

NO. 8.

ORIGINAL ARTICLES.

THE RELATION OF STATIC DISTURBANCES OF THE ABDOMINAL VISCERA TO DISPLACEMENTS OF THE PELVIC VISCERA.¹

By J. H. KELLOGG, M. D.
BATTLE CREEK, MICH.

(Continued.)

A Study of the Influence of Waist Constriction, by Graphic Methods.—The observations were made by means of an air pessary with a recording tambour, the movements of which were registered upon a kymographion in the usual manner.

Plate II, Fig. 1, exhibits the movement of the pelvic organs produced by respiration, ordinary and forced, in a patient in a horizontal position, and without constricting bands of any sort.

Plate II, Fig. 2, shows the movement of the pelvic organs, results from ordinary and forced respiration, patient horizontal, as before, but wearing a corset moderately tight. The difference between the two tracings is noticeable in that the movement of the pelvic organs is less when the corset is tight than when it is loose. The reason for this is made apparent by the tracing shown in Fig. 3, Plate II, the first part of which shows ordinary respiration without a corset; the last part, ordinary respiration after the corset had been applied. The sudden elevation in the center of the tracing indicates the downward movement of the pelvic organs occasioned by the tightening of the corset.

Plate II, Fig. 4, shows the same thing, and also exhibits the influence of cough-

ing upon the pelvic organs. The enormous curve produced in the act of coughing indicates a corresponding amount of displacement of the uterus and its adnexa in a downward direction. Another point in this tracing to which I wish to direct attention, is the greater amplitude of movement when the corset was loosened, which coincides with what is learned by comparison of the tracings shown in Figs. 1 and 2, or the first and last portions of Fig. 3. This lessened amplitude of movement at first surprised me; but on consideration, the reason is plain. It is due to two causes: 1. The compression of the abdominal wall crowds a portion of the abdominal contents upward, while another portion is crowded downward. By this displacement of the viscera the movements of the diaphragm are restricted. This muscle not being able to descend to the usual degree, there is less movement of the pelvic viscera than without the corset. 2. The degree of easy mobility of the uterus in the direction of the longitudinal axis of the body is lessened by the compression of the corset, as shown by Fig. 3. Consequently the excursions produced by ordinary respiratory movements, or by the extraordinary movements of forced respiration, coughing, etc., are necessarily more limited under the restricting influence of the corset than without it.

Plate II, Fig. 5, shows the relative influence of different positions of the body upon intra-pelvic pressure. It will be noticed that the greatest change in pressure occurs in rising from the horizontal to a vertical position, and in assuming the genu-pectoral position. The facts elicited by the tracing agree precisely with what have been held as accepted facts, but for which heretofore we have had no scientific or exact representation, for which reason, chiefly, I offer them as being of interest.

¹ Presented at the International Congress of Gynecology and Obstetrics at Brussels, Belgium, September, 1892.

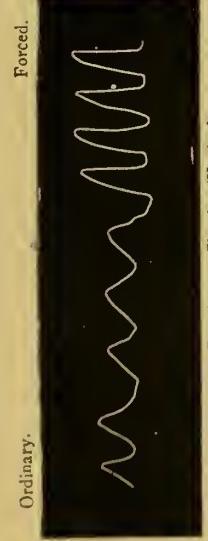


Fig. 1. Respiratory Tracing (Vaginal).
Without Corset. With Corset.
Tightening Corset. With Corset.



Fig. 3. With and without Corset.
With Corset. Without Corset.



Fig. 4. Coughing (Vaginal Tracing).

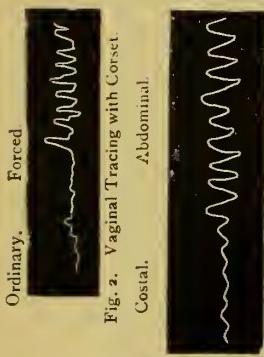


Fig. 2. Vaginal Tracing with Corset.
Costal. Abdominal.



Fig. 3. With and without Corset.
With Corset. Without Corset.

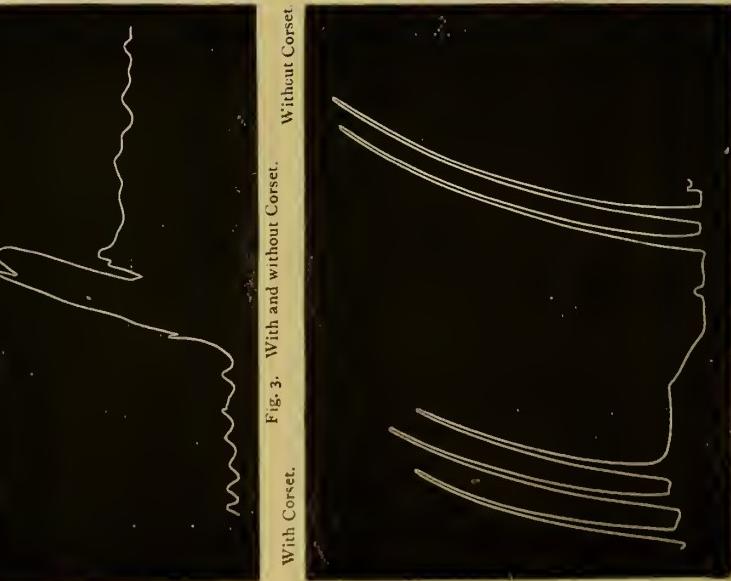


Fig. 4. Coughing (Vaginal Tracing).



Fig. 2. Vaginal Tracing with Corset.
Costal. Abdominal.



Fig. 3. With and without Corset.
With Corset. Without Corset.



Fig. 4. Coughing (Vaginal Tracing).



Fig. 7. Influence of Bodily Movements upon Intra-pelvic Pressure.



Fig. 5. Influence of Position on Intra-pelvic Pressure.

Plate II, Fig. 7, exhibits the influence of certain movements of the body upon intra-pelvic pressure. It is noticeable that bending backward increases the pressure, while bending forward lessens the pressure. Under the influence of a tight corset, the degree of pressure induced by bending backward was increased, while the decrease of pressure in bending forward was greatly lessened, or was more than neutralized by the pressure of the corset upon the lower portion of the abdomen.

The facts elicited by my observations of the respiratory movements of the pelvic viscera present themselves as follows:—

1. There is a normal movement of the pelvic viscera corresponding to those of respiration.
2. These movements are lessened by the constriction of the waist, inducing the costal type of respiration, as the result of two factors, (*a*) the lessened movements of the diaphragm, and (*b*) the downward displacement produced by the pressure of the corset upon the abdominal walls.

Effect of Constriction of the Waist upon Intra-pelvic Pressure.—The tracings which I have exhibited show merely relative pressures. In order to obtain at least an approximate idea of the amount of pressure to which the pelvic organs are normally subjected, and to which they are subjected by the wearing of a corset or other constricting articles of dress, I have made a number of observations by means of a mercurial dynamometer, adapted to the purpose. In using the instrument for testing intra-pelvic pressure, I filled with water the bulb of an ordinary air pessary previously placed in the vagina, and connected it with the cistern of the dynamometer. I have made many measurements with this instrument in this manner, and have obtained some most interesting results, which I have tabulated. Without reviewing the whole number of measurements recorded in my tables, I will present the following, which have a most important relation to the subject under consideration:—

(The measurements were taken with the patient in three positions, lying, sitting, and standing, and both with and without a corset in all these various positions.)

In a case which may be considered an average one, a young woman of twenty years of age, starting with an initial press-

ure of eight tenths of an inch of mercury, with the patient lying down, the mercurial column was raised in ordinary breathing from .01 to .05 of an inch by each respiratory movement. In forcible respiration, the mercurial column was raised from .35 to 1.7 inches.

Such acts as laughing, coughing, or blowing the nose raised the mercurial column from 1 to 4.1 inches. When the initial pressure was 1.5 inches, bending forward lowered the column from .0 to .5 inches; bending backward raised it 2 inches.

On tightening the corset, the mercurial column was raised .5 of an inch; in forced respiration, from .2 to .5.

Rising to a standing position, the initial pressure increased .5 inches, and other pressures increased in proportion. I have not yet pursued these studies as far as I desire to do, and hope to perfect my apparatus so as to be able to obtain a very accurate idea of intra-pelvic pressures, and the extent to which aberrations from the average normal pressures are possible; but I think I have, at least, shown that variations in pressure, corresponding to the tracings made by the recording tambour and kymographion, represent changes which are very considerable in degree and of important pathological import. This will be more fully appreciated, perhaps, when it is remembered that an inch of mercury represents about one half pound of pressure, and that even so small a pressure as .5 of an inch of mercury, or four ounces avoirdupois, amounts to a very considerable aggregate when applied to every square inch of pelvic floor.

Direct Measurement of the Amount of Displacement of the Uterus Induced by Constriction of the Waist, etc.—Finding no convenient method of measuring the actual amount of movement of the uterus along the axis of the body, I devised an instrument (Fig. 3) by means of which the movements of the uterus in relation to the longitudinal axis of the body

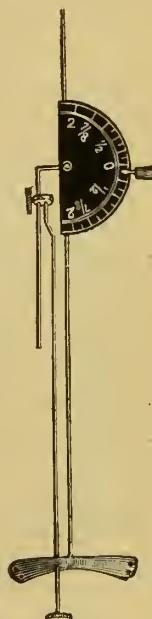


Fig. 3. Instrument for Measuring Vertical Movements of the Uterus.



Fig. 1. Man with Enlarged Spleen.



Fig. 2.



Expiration.

Inspiration.



Fig. 3. Pneographic Tracing of a Healthy Woman.



Fig. 4. Woman in Corset.

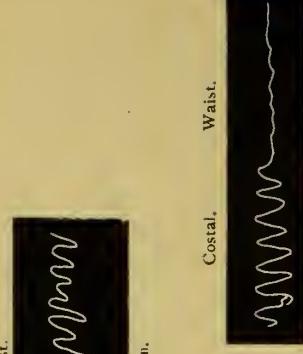


Fig. 5. Man.



Fig. 6. Woman in Corset.

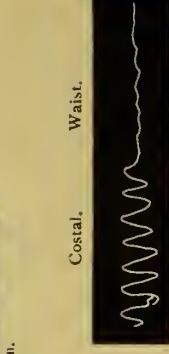


Fig. 7. Chippewa Indian Woman.

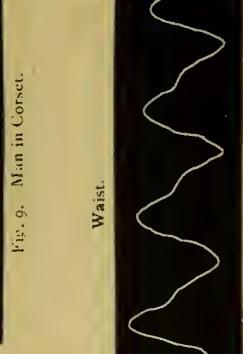


Fig. 8. Woman Who Never Wore a Corset.



Fig. 9.

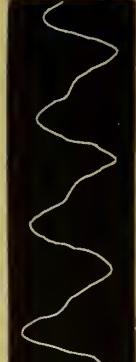


Fig. 10. Dog.



Fig. 11. Dog with Corset on.

are so magnified as to render apparent slight movements of ascent or descent

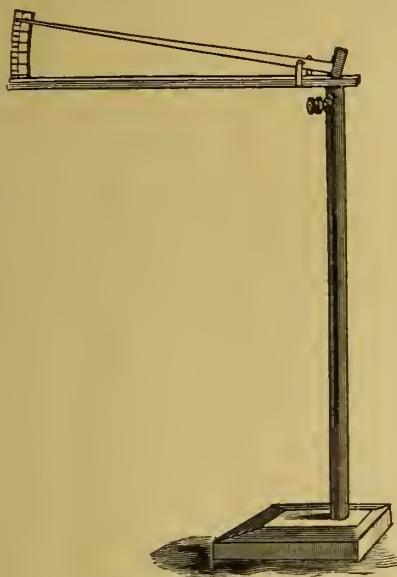


Fig. 4. Instrument for Measuring Movements of the Perineum.

which might otherwise escape detection. The action of the instrument will be easily understood from the accompanying cut. By means of this instrument, I find that the movements of the uterus up and down in ordinary breathing are from .1 to .3 of an inch. Coughing or deep breathing, straining, and similar movements may increase this to .5 of an inch. By the application of the corset, or other constricting means, I find the uterus is lowered in the pelvis from .2 to .5 of an inch.

By means of another instrument, shown in Fig. 4, which I have constructed for the purpose, I have undertaken to measure the amount of displacement of the abdominal viscera through waist constriction, by observing the changes in the position of the perineum in relation to the longitudinal axis of the body under the influence of pressure. The instrument consists simply of a lever sustained by an upright and adjustable support, furnished with a vernier, against which the end of the long arm of the lever plays while the short arm is applied to the perineum. The fulcrum of the lever is so placed that the recording end of the lever has an amplitude of movement just five times that of the end placed against the pelvic floor. The instrument can be

used with the patient lying or standing. By use of this instrument, I find that lacing of the corset as tight as ordinarily worn, depresses the pelvic floor from five to twelve millimeters. I have sometimes observed a rise in the pelvic floor, of fifteen millimeters immediately after the corset was loosened.

The interference of waist constriction with respiration is also evident from a study of the tracings shown in Figs. 3 and 4, Plate III, which were obtained by means of a pneograph, shown in Fig. 5. This instrument consists essentially of two chambers separated by a diaphragm of thin rubber. One of these chambers is connected with a recording tambour which writes upon a sheet of smoked paper carried by a revolving cylinder such as is used with the ordinary pneumograph. With the other chamber is connected a breathing mask, which in use is placed over the mouth and nose. This chamber is provided with a second opening, the size of which is controlled by a shutter, which can be adjusted at will. In use, the patient under examination breathes into this chamber, which may be called the breathing chamber of the instrument. With the chamber completely closed, the breath would simply pass from the mouth into the chamber and back again, there being no change of air, but with the shutter open, the air is drawn into the chamber with each inhalation and expelled at each exhalation. The resistance which the air meets in passing through the shuttered opening gives rise to changes in pressure within the breathing chamber, the pressure being diminished during inspiration and increased during expiration. The amount of this change in pressure will depend upon the size of the opening, and can be exactly measured by connecting the breathing chamber with a water column. The average pressure which I have observed is equivalent to a column of water one half inch in height.

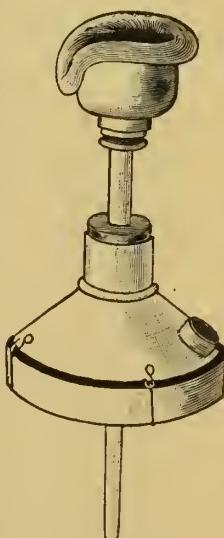


Fig. 5. Pneograph.

This is certainly an amount too small seriously to modify the form of the respiratory movements.

The changes in pressure in the breathing chamber of course give rise to movements of the rubber diaphragm separating the two chambers of the instrument. These movements actuate in turn the diaphragm of the recording tambour, which writes upon the recording cylinder in the usual way. That portion of the curve above the base line represents expiration, that below, inspiration. The difference between the curves shown in Fig. 3 and those in Fig. 4, Plate III, suggests the interference with respiration through the increase of abdominal pressure resulting from waist constriction.

Gynecologists have often called attention to the baneful influences of high heels in producing pelvic disease. Many of the outline tracings which I have made, very clearly confirm this opinion. Forward carriage of the hips results in a depression of the chest and in an increase of the normal posterior dorsal curve, lessens the chest capacity, and depresses the viscera which occupy that portion of the trunk lying between the diaphragm and the lower part of the ribs.

Prof. Dr. E. Meinert, of Dresden, kindly sent me a few months ago a number of photographs in which the evil effects of waist constriction in causing visceral displacements is very clearly shown by outlines traced on the skin. In a letter accompanying the photographs, Dr. Meinert, who had seen some of the outline tracings which I have made, kindly says, "So far as I have made studies in the same direction, I can verify your opinions on every point."

Dr. Meinert's method of investigation is a very original and ingenious one, and possesses the merit of accuracy in the highest degree.

Injuries Resulting from the Common Mode of Dress through Interference with Normal Respiration.—What is normal respiration in a woman?—Thirteen years ago, in a published article upon this subject, I wrote as follows:—

"It is undoubtedly true that most women do breathe almost exclusively with the upper part of the chest; but whether this is a natural peculiarity, or an acquired and unnatural one, is a question which I am decidedly inclined to answer in harmony with the latter supposi-

sition, basing my conclusion upon the following facts:—

"1. In childhood, and until about the age of puberty, respiration in the boy and girl is exactly the same.

"2. Although there is a change in the mode of respiration in most females, usually soon after the period of puberty, marked by increased costal respiration, and diminished abdominal or deep respiration, this change can be accounted for on other than physiological grounds.

"3. I believe the cause of this modification of respiration is the change in dress which is usually made about the time of puberty. The young girl is now becoming a woman, and must acquire the art of lacing, wearing corsets, stays, and sundry other contrivances which will aid in producing a fine form.

"4. I have met a number of ladies whose good fortune and good sense had delivered them from the disturbing influence of corset-wearing and tight-lacing, and have invariably observed that they are as capable of deep respiration as men, and practice it naturally."

I am thoroughly convinced that this so-called physiological difference between man and woman is really a pathological rather than a physiological difference. In short, I believe that the only reason why women do not, under ordinary circumstances, breathe as do men, is simply that they cannot breathe naturally.

Five years ago, I improved the opportunity afforded by a journey through the western portion of the United States, to take pneumographic tracings of the breathing movements of the women of various Indian tribes, together with more than twenty Chinese women in San Francisco, Cal. I have also obtained graphic representations of the breathing movements of the lower animals, chiefly those of dogs. The results, some of which are presented in Plates II and III, show most conclusively that there is but one normal type of respiration in human beings, and that the so-called "female type" of respiration is only the result of a mode of dress which restricts the natural respiratory movements of the lower portion of the chest. It is a mistake, however, to consider abdominal respiration as the natural mode of breathing in either men or women. In normal respiration, the chief movement of the chest is neither in the upper thoracic region, nor that which

has been denominated abdominal respiration. The principal movement of the chest is in the inferior costal region. The anatomical structure of the skeleton and the arrangement of the muscles and their relation to the chest naturally give to this portion of the thoracic cage the greatest degree of mobility. It is, in fact, only by expansion of the lower portion of the chest that the diaphragm can act efficiently in increasing the thoracic capacity in the longitudinal diameter. The action in normal breathing begins with expansion, first of the sides, then in front, then a slight elevation of the upper chest, and, in forced respiration, a slight drawing in of the lower abdomen at the same time. In ordinary respiration, there is simply a lifting forward of the whole front wall of the chest and abdomen, the movement extending all along the line from the upper end of the sternum to the pubes.

The so-called abdominal respiration is not only unnatural but unhealthful; indeed, it has been, in many cases, productive of serious injury.

Correct breathing is as necessary to the health of the pelvic and abdominal viscera as to a healthy condition of the lungs; for the inspiratory act not only pumps air in and out of the body, but draws blood to the heart, assisting particularly the portal circulation, and thus also aiding in the absorption of the products of digestion, and so facilitating the digestive process. It is quite possible, also, that the rhythmical movements imparted to all the viscera of the trunk by normal respiration are a sort of vital gymnastics, essential to the health of each organ. The effect of inspiration is to increase abdominal tension. This is accomplished by the flattening of the diaphragm, which is facilitated by the increase in the lateral transverse diameter of the lower part of the chest, induced by contraction of the inspiratory muscles. The effect of the increased abdominal tension is to facilitate the emptying of the veins of the portal circulation, in which there is a natural tendency to congestion, as the result of the resistance of the hepatic capillary system, which intervenes between them and the general venous system. In normal respiration, in which the intra-thoracic pressure is diminished to the necessary degree by proper expansion of the chest cavity, the emptying of the portal circulation is greatly facilitated.

When the waist is constricted, both elements of the respiratory process through which the abdominal pelvic circulation is assisted are seriously weakened. The increase of the abdominal tension, resulting from the pressure of the diaphragm, is prevented by the fact that the transverse diameter of the lower portion of the chest is not only diminished, but fixed. The lateral attachments of the diaphragm are thus approached in such a manner that this muscle is rendered incapable of efficient contraction. At the same time, the intra-thoracic negative pressure is diminished through the crippling of the inspiratory act. The lower portion of the chest being held firmly, any increase in the transverse diameter of this part is impossible. The normal descent of the diaphragm being prevented, the longitudinal diameter of the chest cannot be increased to the proper extent. In consequence of the constriction and the compression of the abdominal walls by the corset, this abdominal force is largely expended upon the organs of the pelvis, which are forced down out of position. The pelvic floor is more yielding than the rigid walls of the upper chest, and is depressed, thus laying the foundation for chronic displacement. A civilized woman, wearing the ordinary dress, cannot expand her waist more than one fourth of an inch when taking a deep inspiration. Expansion must occur somewhere, and the abnormal mode of dress necessitates that it shall be at the upper and lower extremities of the trunk. The greater resistance of the upper ribs, and the yielding character of the structures which form the pelvis, lead to a lowering of all the organs which are dependent upon the latter for support.

The injuries resulting from abnormal breathing movements do not require for their production an extreme degree of waist constriction. They are commonly met with as the result of the ordinary mode of dress, the wearers of which would doubtless defend themselves against the charge of "lacing." It is only necessary that the clothes should fit the body snugly when the chest is in repose, to bring into play all the disturbing forces to which attention has been called, as soon as increased muscular activity produces deeper or more vigorous respiratory movements than usual, and consequently a demand for more waist room.

Muscular Weakness as a Cause of Visceral Prolapse.—The general neglect of such exercise as will result in a vigorous and symmetrical development of the muscular system prevalent among women addicted to waist constriction, is a natural result of the interference with muscular activity which the wearing of such a dress involves.

By the inactivity of the muscles of the trunk and the failure of development due to continued pressure, the muscles of the central and anterior portions of the trunk become abnormally weak, so that their natural tone is insufficient to support the abdominal contents in their normal position. An additional injury results from the failure of these weakened muscles to perform their duty as guys, which balance the upper half of the pelvis upon the trunk, and by their efficient action in health maintain a graceful and healthful poise of the body.

The strong and beautiful curves which are observed in a spirited horse are not only attractive from an aesthetic point of view, but are also of the highest significance from a physiological standpoint. In the healthy, vigorous animal, one observes that the head is held high, the neck and back strongly curved, the limbs firmly set, and the whole expression indicates vigor and strength. The same is equally true of the human body. An erect head, well curved back, prominent chest, retracted abdomen, and firmly set limbs are indicative of an energized carriage of the body which is characteristic of health. The flat chest, posterior dorsal curve, projecting chin, and protruding abdomen are equally indicative of a relaxed and weak carriage of the body, characteristic of feebleness and disease. The spiritless and tired horse does not hold his head down; he lacks the vigor and disposition to hold it up. So the woman who has been accustomed to the support of stays of steel or bone finds herself, when without these means of support, feeling, as she says, as though she would fall into pieces. The muscles of the waist lack the ability to balance the chest and shoulders upon the hips.

The direct effect of the corset, and of any constriction of the waist, is to break down the natural curves of the back, straightening the spine, thus depressing the chest, and causing the shoulders to

fall forward, and producing general collapse of the front wall of the trunk.

In consequence of the weakening of the muscles which support the trunk, and especially weakness of the waist muscles, an ungraceful and unnatural carriage of the body appears, not only in walking and standing, but in sitting. The weak-waisted woman is comfortable only when sitting in a rocking or easy chair. She cannot be comfortable unless the back is supported; consequently, in sitting, the muscles of the trunk are completely relaxed, thus causing collapse of the waist and protrusion of the lower abdomen by the depression at the waist occasioned by the depression of the ribs.

Such persons, in standing, assume a great variety of awkward and unhealthful positions. The most common faults are, dropping the shoulders, projecting the chin, hips too far forward, weight resting upon the heels or upon one foot, and a general lack of even and graceful balance of the body. In walking, the forward position of the hips makes it impossible to plant the whole sole of the foot down at once, and firmly, so the weight is thrust continually upon the heels. This difficulty is increased by wearing high-heeled shoes. A swinging, swaying, wriggling, or otherwise awkward gait is the most common mode of walking one sees in women, very few of whom are good walkers, in consequence of the inability to balance the body well, through weakness of the muscles of the waist.

The extreme frequency of spinal curvatures of various forms in woman and their comparative infrequency in men is an evidence of the prevalent weakness of the muscles of the trunk in women, which results from their neglect of active physical exercise; at least this is true of American women. A notable degree of spinal curvature, sufficient to produce asymmetry of the body, may be found in the great majority of American women.

I made recently a careful examination, with special reference to bodily symmetry, of 200 students in attendance at a college, seventy-five of whom were young women and 125 young men. Of the young women, whose ages were from eighteen to thirty, only four were found who did not present some degree of lateral curvature of the spine, which in a number of instances was so exaggerated as to interfere seriously with respiration. Marked pos-

terior curvature of the spine was prominent in a large proportion of the cases, especially in the middle and upper dorsal region, resulting in forward carriage of the chest and head. Among the much larger number of young men, scarcely a dozen cases were found in which the spine was perceptibly curved, and only one very decided lateral curvature. The showing for the young men in this instance was, perhaps, unusually good, owing to the fact that they were largely from the country, and had been all their lives accustomed to active out-of-door work and sports.

Sir John Forbes, who has made quite extensive investigations upon this subject in schools for young women in England, records that on visiting a boarding school containing forty girls, he found, on close inquiry, that there was not one girl who had been in the school two years who was not more or less crooked, doubtless as the result of lack of muscular exercise.

An examination of the young ladies' seminaries in this country would doubtless disclose a similarly deformed condition of the young women students. The young woman who grows up in a rocking-chair or behind the ordinary school desk, cannot escape a greater or lesser degree of distortion of the trunk.

(To be continued.)

PROPER TREATMENT OF SO-CALLED OBSTRUCTIVE DYSMENORRHOEA.

THERE are doubtless few gynecologists who have not been many times disappointed in the results obtained by forcible dilatation for relief of painful dysmenorrhea which could not have been fairly attributable to ovarian disease. The late Dr. Peaslee was, we believe, the first to advocate the mechanical treatment of these cases by gradual dilatation, for the performance of which he devised a graduated series of hard rubber sounds. The frequency of failure resulting from this method of treatment has led many surgeons to denounce it as altogether unsuccessful. In the treatment of a considerable number of cases of this class during the last fifteen years the writer has arrived at the conclusion that these cases are not really obstructive as Dr. Peaslee supposed, and are not simply neurotic in character, as has been more recently suggested. But the obstruction is

not directly due to the anteflexion which is usually found, but to the presence of vascular growths which swell up at the menstrual period, and obstruct the narrow canal which, but for this obstruction, would still be large enough to carry off the menstrual fluid, and prevent painful menstruation from this cause.

The result of this observation has been such as to lead the writer to always employ curetting in connection with the dilatation. It is not necessary to carry the dilatation to the extent recommended by Spencer Welles and others, who dilate the cervical canal sufficiently to make it possible to introduce the index finger. We never carry dilatation to that extent. It is only necessary to dilate the canal sufficiently to be able to introduce a medium-sized curette. Those who have never employed curetting systematically, after dilatation, whether or not the case had presented any of the recognized signs of fungus growths, will be surprised to note the frequency with which enormous quantities of vegetations will be found present. The writer has sometimes removed from half an ounce to an ounce of vegetations in cases in which the menstrual flow has been scanty and infrequent, and in which neither menorrhagia or metrorrhagia had ever been present. The treatment of these cases by this method is certain to be followed by prompt relief when no ovarian disease is present; and if the case is complicated by ovarian disease, the pain suffered by the patient will be found to be changed in character and greatly mitigated.

The return of the growths is prevented by the application of electrolysis. The application of the negative pole is perhaps preferable, although we have found good results with positive, as well as negative, electrolysis. For the last year I have made use of metallic electrolysis, employing for the internal electrode a thick copper wire, and have had ample reason to be satisfied with the method of treatment employed.

In the use of electrolysis a moderate current is required,—from ten to twenty milliamperes is sufficient. In cases of dysmenorrhea due to hyperesthesia the positive pole should be used. In cases of so-called membranous dysmenorrhœa, dilatation and thorough curetting, followed by electrolysis, will be found speedily effective in most cases. J. H. K.

TRANSLATIONS AND ABSTRACTS

[THE articles in this department are prepared expressly for this journal.]

THE POISONS OF THE BODY — THE CHANNELS THROUGH WHICH THEY ARE ELIMINATED.

Translated from the French by J. H. Kellogg.

The Lungs.—The expired air contains oxygen, carbonic acid gas, nitrogen, watery vapor, some traces of ammonia, and, according to Davy and Loossen, possibly hydrogen sulphide or carbide. Few authors agree with Weiderhold, that the expired air contains, also, uric acid and some badly defined hydrochlorates. The limited substances which escape through the respiratory mucous membrane must be volatile, a fact which restricts the number of substances eliminated through this channel.

Is the expired air toxic?—Certainly it is, since it contains carbonic acid gas. Do the other elements which it contains, aside from carbonic acid gas, confer upon it a toxic power?—The experiments of Brown-Sequard and of D'Arsonval appear to demonstrate that they do; but we cannot ignore the experiments of Dastre and Loyer and others, the results of which contradict those of Brown-Sequard.

We may, however, remark that chemistry apparently ignores some of these respiratory products. No one, for example, at the present time, has demonstrated among the respiratory products, any of the secretions of microbes, notwithstanding Arnaud and Charrin have shown that among these toxines there are to be found volatile substances. It is even impossible to vaccinate by this group of toxines. The diagnosis of diabetes may sometimes be based upon the odor of acetone thrown off by persons affected with this disease; besides, in rare cases, the breath reveals the existence of fatty acids, as in the cases of hypochondria and constipation.

Certain poisons, such as chloroforms, ethers, alcoholics, asafoetida, some balsams, etc., when introduced into the digestive canal, choose the air passages as their means of exit. The effects of enemas of sulphurated hydrogen will be remembered. We may add that Du Bois-

Reymond has called attention to some ill-defined objects which are to be found in the expired air. This subject is not yet fully elucidated. The mind does not easily accept the idea that there is nothing dangerous in the expired air.

The Skin.—The skin eliminates salts, lactates, sudorates, earthy phosphates, alkaline sulphates, chlorides of soda and potash, fatty matters, epithelium, etc. These constituents are present in very minute quantities, often only traces, so that in a thousand parts of perspiration the proportion of water is 988.40. In the analysis, Funcke, Schrottin, and Favre are clearly agreed upon these points. Notwithstanding, it is proper to mention the group of nitrogenized matters which are practically reduced to urea. Devoto, however, mentions nitrogen; Ergutinsky, acetone; and Buisine, malic acid.

Numerous conditions, as temperature, diet, drinks, nervous activity, and the anatomical structure of regions, modify the function of both the sudoriferous and sebaceous glands.

Sometimes the sweat glands throw off pigments. It is possible to discover iodine, arsenious acid, benzoic acid, and sulphate of quinine in the perspiration of persons subjected to the influence of these drugs. In rheumatism, substances belonging to the fatty series are increased. In tuberculous patients, the isolation of special products has been claimed.

Recently the possibility of the passage of microbes through the intact skin has been studied. Babes believed that the bacillus of glanders is capable, especially if aided by friction, of passing through the different layers of the skin.

Brunner, in a patient suffering from purulent infection, has observed the presence of a white staphylococcus in the blood and in the sweat. This may have been a pure coincidence, the staphylococcus pyogenus albus being not rare upon the cutaneous surface. Always, by causing an animal to perspire, whether by applying electrical currents to the sciatic nerve or by injecting pilocarpine, the same author has collected upon the surface the bacteridia and prodigiosis which had been previously introduced into the circulation.

It would be easy to raise here, interminable discussions respecting the capacity of the skin to absorb or expel substances. The discussions of this sub-

ject in relation to baths leave nothing to be said. Galvanic currents encourage the process of osmosis. It would be easy to dwell upon the erythemas, roseolas, eczemas, etc., which testify unequivocally to the efforts of the skin to throw out poisons of multiple origin. These poisons originate, it may be in the tissues, as in gout; it may be in soluble or organized ferments in the digestive tube. They may also be received from without, by accident or otherwise. On the other hand, the trophic nerves, the vaso-motor nerves, physical agents, such as injuries, radiation, parasites of various sorts—these are all capable of modifying the skin, and especially the epidermis, in such a way as to favor or to interfere with its activity. Kemadjin Mihran has shown that a simple irritation of the skin is sufficient to cause the appearance of albumen in the urine.

The Salivary, Mammary, and Mucous Glands.—The lacteal secretion is, first of all, a nutritive liquid. However, this secretion frequently carries with it, medicines, toxines, even microbes—*staphylococcus aureus*, for example, according to Eiselsberg.

We must mention the internal excretion, the throwing off of the products of disassimilation into the circulation, either lymphatic or blood circulation. These different elements are controlled by influences the most varied, some of which, recently brought to light, are most curious; for example, the pyocyanic toxines increase the volume of the lymph.

It is not necessary to dwell upon these discoveries to make apparent their great importance. The changes are due, on the one hand, to a liquid produced by our own body; on the other, to an organic secretion of parasitic origin.

Other series of glands which merit our attention are those of the genital organs, the lachrymal glands, the mucous glands of the nasal cavity and of the cavity of the mouth, and still more the salivary glands. These may properly be considered as supplementary channels of excretion.

The Intestine.—The digestive tube, in addition to its important role in absorption, excretes a series of toxic products. As evidence of this, it is sufficient to glance at the composition of its contents. These consist of food substances which are soluble or refractory to the gastric

juices, elastic tissue, horny tissue, mucin, nuclein, cellulose, chlorophyle, lime, and soaps. There are also to be found, nutritive elements which have been partially digested but not completely changed, fragments of muscular tissue, starch granules, food albuminoids, etc. There are also to be found, biliary principles more or less decomposed, pigments, urobilin, stercobilin, glycocholic and chlolalic acids, taurin, dyslysin, cholesterin, mucin, and lecithin. Besides butyric, oleic, palmitic, propionic, valeric, acetic, lactic, phenic, stearic, isobutyric, and caproic acids, we find indol, skatol, cresol, phenol, and the excretin of Maracet. There are also soluble and insoluble salts, chlorides, phosphates, alkaline sulphates, phosphates of chalk and magnesia, etc.

We may add to this enumeration, some alkaloids, bacteria, diastasic bodies, ferments, epithelial cells, gas, hydrogen, nitrogen, carbonic acid gas, hydrogen sulphide, marsh gas, all slightly irritating to mucous and serous membranes, according to Brautigan; and we shall still be far from having told all. The intestine receives various elements, some simply useless, others more or less noxious, from different sources. The mucous glands, the pancreas, and the liver unite in throwing into this canal a crowd of bodies of which the system must rid itself.

Great attention is given, and properly so, in works on physiology, to the rôle of the digestive tract in the phenomena of transformation, assimilation, and absorption. Perhaps we have too much neglected the part which it plays in elimination. A series of substances, after having passed through the general circulation, find their exit through the walls of the ilium, the cæcum, or the colon. If we inject corrosive sublimate, in a solution of 1 gram in 4 or 5 liters of water, into the vein of the ear of a rabbit, the animal will die, and the autopsy will reveal ulceration of the large intestine. Inject into the vessels the toxines of the bacillus of blue pus, and there appears the diarrhoea which follows when an animal is inoculated with the bacillus itself. If, on the contrary, we introduce these toxines into the digestive tube, great difficulty will be experienced in inducing similar symptoms. Mercury, as well as the secretions of microbes, seeks exit

from the body through the cavity of the intestine. The same occurs with toxins naturally produced within our own bodies, when, Bright's disease having closed the kidney, digestive uræmia occurs.

The hepatic cell by its activity destroys a multitude of poisons. From ammonia it produces urea, a body infinitely less poisonous than the alkali. It removes from the body certain principles, coloring matters in particular, especially when there has been an effusion of blood. Besides biliary acids, salts of soda, potash and magnesia, mucin, lecithin, cholesterin, olein, palmitin, sulphates, etc., in pathological conditions, there appear lead poisoning and a series of other drugs or poisons, as iodide of sodium, essence of turpentine, antimony, iron, arsenic, etc.

The importance of these channels of elimination is due in part to the noxious qualities of the products to which they give exit. The biliary acids and salts, according to Röhrig, Feltz, Ritter, and Muller; bilirubin and biliverdin, according to Bouchard and Tapret, are highly active poisons; 5 c.c. ($1\frac{1}{4}$ dram) of beef bile killed a rabbit weighing 1500 grams (3.3 pounds). When the coloring matters are removed from the bile, twice the quantity is required for a fatal dose.

We may add that the biliary salts disintegrate the blood globules, alter the muscular fibers, and produce degeneration of the liver cells—the very cells by which they have been produced.

Icterus urine is extremely poisonous, its toxic properties being especially due to potash and other mineral matters which are derived from cellular disintegration.

Panum, Hemmen, Bergman, with others, long ago called attention to the toxic character of the intestinal contents. Prof. Bouchard has shown the special properties possessed respectively by the aquems and the alcoholic extracts, and further, he, with Selmi, Gautier, Brieger, and Taurat, has demonstrated the presence of alkaloids which, for the greater part, are derived from bacteria.

It is easy to demonstrate the noxious properties of these matters. It is only necessary to inject them into an animal, when convulsions quickly appear, especially if the alcoholic extract is employed. In considerable part these

disturbances may be due to ammonia or to the salts of potash.

The toxic elements, soluble in water, generally produce weakness and drowsiness. Stich discovered this property of the faecal matters by depositing in the intestine of one species the faecal matter of another species. The circulation absorbed, so to speak, a part of these toxic matters from the surface of the mucous membrane, to eliminate them through the kidneys. A most satisfactory method of demonstrating the toxic properties of these substances consists in establishing rigorous antisepsis of the digestive tube by means of some insoluble antiseptic. By this means we are able to place in evidence the fact as recognized by Prof. Bouchard, that by means of this intestinal antisepsis, the toxicity of the renal secretion is modified.

In three patients suffering from chronic enteritis, I have succeeded, by the employment of naphthol B, administered in the proportion of 4 grams in 24 hours, in suppressing a third of this toxicity. Surmount, in some cases of hepatic disease, has been able to diminish it one half.

Sulpho-conjugate acids, of which the most important is indican, may serve to indicate the intensity of intestinal putrefactions, it being understood that these putrefactions constitute the principal origin of the acids.

The anti-microbial action of the gastric juice limits these fermentations. Thus, in cases of renal disease, when free hydrochloric acid disappears, there results an increase in the excretion of these elements—it is at least doubled.

The bile is equally active in the rôle of an antiseptic. In cases of icterus, these same sulpho-conjugate elements are found in great abundance in the bladder. They return to a normal proportion when the faecal matters recover their natural state. Calomel in a daily dose of 5 to 8 grains has no influence upon their quantity. It affords little opposition to the evolution of germs in the intestine. This is, without doubt, due to its solubility. By virtue of this property it remains too short a time in the digestive canal, so that its action is too ephemeral to be practically useful. The influence of the alimentary canal upon the preservation of the viscera has long been known. I killed at the same moment,

three rabbits by puncture of the bulb. The first received an intravenous injection a moment before, of a solution of corrosive sublimate, 1-1000; in the case of the second, as in both the others, the abdomen was opened upon the linea alba. In the case of the second one, the intestinal canal was removed, the ligature being applied at the cardiac orifice and the anus. In the case of the third, the abdominal cavity was simply opened. The bodies were placed in identical conditions, as regards light, heat, ventilation, etc. Each day a culture was made from the liver and kidney of each rabbit. It was clearly manifest that the invasion of the viscera by microbes was most prompt in the subject from which the intestines were not removed, the slowest in the one deprived of its intestines, while the rabbit which was injected with mercury held the middle place.

Kidneys.—The facts which we have already presented amply suffice to place beyond dispute, on the one hand, the toxic properties of the contents of the ilium and the colon; and on the other hand, the passage of a part of these toxic principles into the circulation, and thus into the bladder. This passage reveals a grave defect in the conduit charged exclusively with the principle of elimination. This defect arises from a property possessed by the mucous membrane of absorbing certain matters which flow over its surface. Consequently, it cannot be known what substances will be completely expelled by the intestine, which ones will be taken up by the circulation; nor, for a given body, what quantity will be expelled and what proportion will be absorbed. If we add to these considerations the difficulties, or rather the inconveniences, of the manipulation and handling of the faecal matters,—obstacles which are readily recognized, if one desires to inject them in a natural state,—it will be readily seen why the urine is preferable for study, especially as the pelvis of the kidney, the ureter and the bladder, in a normal condition, do not absorb, while the urine incloses an indefinite series of products which have been produced in the system,—water in excess; a considerable weight of solid matters, particularly of mineral substances; numerous bodies, some nitrogenized, others non-nitrogenized (urea, uric, hippuric and oxaluric acids; xan-

thin, allantoin, creatin; lactic, oxalic, phosphoric and succinic acids, and traces of volatile fatty acids) some sulpho-conjugate acids (indican, phenol-sulphuric, cresol, sulphuric, sulpho-pyrocatechic); salts of soda, potash, chalk and manganese; chlorides, phosphates, carbonates, ammonia, alkaloids, ptomaines, leucomanes; coloring and odorous principles, etc. Some of these products appear only under anomalous circumstances, as globulins, toxalbumins, certain diastases, cerin, gases, compounds, etc.; others form an integral part of its composition.

It is necessary to add that with this secretion, as for most others, the chemical variations are numerous. The same is true of the oscillations in physiological processes, as relates to the influence of wakefulness, of sleep, of food, of fatigue, of cerebral work, of health, of disease, etc.

MINUTE STRUCTURE OF THE NERVE CENTERS.

THE recent investigations of the minute structure of nerve tissue by the aid of the new methods of staining, the most important of which were introduced by Golgi, have thrown a vast flood of light upon both the physiology and the pathology of the nervous system. In the last Croonian lecture delivered before the Royal Society, by Prof. Ramon Y. Cajal, some very interesting notes and conclusions were presented. The speaker said that he had been led to conclude:—

1. That there is an interstitial nervous network.
2. That a distinction may be made between sensory and motor cells.
3. That the protoplasmic prolongations of nerve cells have a nutritive function, although they may also serve as conductors of nervous currents.

The further facts illustrated by the speaker may be briefly stated as follows: Nerve currents in protoplasmic prolongations are inward toward the cells. Curves in the axis cylinder are longer. In other words, the protoplasmic prolongations and the cell body are an apparatus for the reception of currents, the axis cylinder for the transmission of currents, and the terminal nerve-ramifications for the distribution of currents.

Cerebral gymnastics cannot increase the number of brain cells, but may lead to the development of the protoplasmic apparatus and of the system of collateral nerve paths; even absolutely new inter-cellular actions may be established by the formation of new collateral connections through protoplasmic expansion.

To the objection that the volume of the brain would be increased by the multiplication and new formation of terminal branches of the protoplasmic appendices and of the collateral nervous connections, it was answered that the expansion of some portion of the brain might be compensated for by a shrinking of other parts not directly related to the exercise of the intelligence.

Hereditary transmission of special family characteristics is explained by the supposition that even distant descendants may inherit the superior organization of the connections of the pyramidal cells. Superior talent coincident with small brains was explained by the supposition that in such cases there is a "complicated system of protoplasmico-nervous associations." On the other hand, the lack of intelligence often manifested by persons with large brains, and the comparatively inferior intelligence of the whale and the elephant is due to deficiency in the protoplasmic connections.

The author compares the cerebral cortex to a garden full of trees which represent the pyramidal cells. Under the influence of properly directed cultivation these trees may increase the number of their branches, extend their roots over a wider area, and thus produce continually a greater profusion of exquisite flowers and fruits.

The speaker also held that the pyramidal cells possess an intra-protoplasmic structure peculiar to them, which is still more highly elaborated in intellects of the higher order,—a structure which does not exist in the cells of the cord or of the ganglia.

Urobilinuria.—Mandry calls attention to the fact that urobilinuria is frequent in severe cases of abdominal section. It occasionally occurs in puerperal fever, but is not absolutely diagnostic of internal haemorrhage, as claimed by Dick.

Borax as an Aid to the Digestion of Milk.—Germaine Séé has recently announced the clinical fact that borax used internally is a valuable aid to the digestion of milk. He discards the use of carminatives, charcoal, and other intestinal antiseptics, claiming that they injure the mucous membrane of the intestines. He employs laxatives,—hydrastis canadensis, castor oil, and olive oil in large doses, or oil enemata. Prof. Séé holds that in many cases of indigestion the stomach is erroneously treated when the real cause of the disease is the intestines, which are often the seat of membranous enteritis resulting from constipation, and giving rise to glary, mucilaginous, cylindrical masses of mucus, with pain and swelling over the region of the colon. These symptoms easily distinguish the cases referred to from ordinary constipation, in which there may be easily seen masses of filamentous or vermicelli-like mucus.

The Brain and Gymnastics.—Modern studies of the brain have placed in a very clear light the fact that in gymnastics, piano playing, and skilled movements of all sorts, the training consists not simply in a discipline of the muscles involved, but is especially a training of the cells at the surface of the brain,—the so-called cortical portion of the brain.

In many cases of paralysis, the failure of the patient to recover the use of the affected muscles is the result of neglect properly to train or educate the muscles. The patient is not always able to do this himself, for the reason that after the injury involving the cerebral region has been repaired, the muscles are often left in a state of such complete disability that the patient is not able to command them by his will; that is, although the connection between the will and the muscles is restored, the muscle is too weak to respond—not that the muscle is unable to contract, but it is unable to contract and at the same time do the work required of it in moving the parts to which it is attached. In these cases, passive movements are of the greatest assistance. The masseur should say to the patient (in a case involving the lower extremities, for example), "Draw up your foot," and at the instant when the patient makes the effort to draw up his foot, the

masseur should raise the foot for him, or give such assistance as is necessary to raise the foot, perhaps leaving the patient to suppose that he has executed the movement himself, thus giving him encouragement and restoring his confidence. After this procedure has been executed for a few days, it will be noticed in many cases that there is a decided increase in the voluntary control of the patient over the affected part; and after a prolonged course of treatment, reaching, if necessary, over weeks or even months, the patient may be able to control the paralyzed parts in a very satisfactory manner. In like manner, the patient may even recover the power of speech after having once lost it. If the patient is able to understand the words spoken to him, although unable to utter them himself, in some cases it is possible to restore the ability to speak by calling his attention to the form assumed by the muscles of the lips and other muscles involved in articulation, and directing him each day in executing these movements, just as a deaf person is taught.

In a case recently reported by Kuchler, a patient by this means acquired the use of more than a hundred words by only six weeks' practice, after having been speechless, or nearly so, for nine years, as the result of a stroke of apoplexy.

Treatment of Gonorrhœa.—Dr. Da Costa treats acute gonorrhœa by spraying the canal with a 15-volume solution of hydrogen peroxide, then applying an antiseptic solution consisting of oil of cinnamon dissolved in liquid vaseline, beginning with a one-drop-to-the-ounce solution for the first day, and afterward using a three-drops-to-the-ounce solution.

Diday recommends a five-per-cent solution of nitrate of silver. The urethra is compressed at the posterior part, and the anterior portion of the urethra is filled and distended by the injection. Six out of eight cases were cured in ten days.

Janet employs a solution of permanganate of potash introduced by means of a siphon, affording sufficient pressure to carry the solution into the bladder. The solution should be used warm, and immediately after urination. It should be encouraged to enter the bladder by having the patient make efforts at emptying

the bladder while the injection is being made, the orifice of the urethra being compressed around the nozzle of the siphon so as to prevent the escape of the liquid. The more intense the inflammation, the weaker the solution should be. In severe cases the proper strength is 1-4000; in moderately severe cases, 1-2000; if acute inflammatory symptoms are absent, 1-1000. A weak solution employed slowly, so that it is retained for some time in contact with the mucous membrane, produces the same effect as a strong solution employed for a shorter time. In severe cases an injection should be made once in four hours; in subacute inflammation, once a day, or once in two days. A whitish secretion occurs a few hours after the injection, then the surface becomes dry. Ten or twelve irrigations are usually required to effect a cure.

Ichthyol in Gonorrhœa.—One of the latest uses suggested for ichthyol is the treatment of gonorrhœa, for which it is employed in injections of a 2-5 per cent solution. It is also used for primary and secondary catarrh of the bladder in a $\frac{1}{2}$ -1 per cent solution. The advantages claimed for it are:—

1. A rapid cure of simple gonorrhœa through the destruction of the specific organisms.
 2. An antiphlogistic and resolvent effect.
 3. The prevention of stricture.
 4. The painlessness of the application, and the relief of pain when present.
 5. In the treatment of catarrh of the bladder, the destruction of germs, the prevention of ammoniacal fermentation, and the relief of a catarrhal condition of the mucous membrane.
-

Unconscious Parturition.—A recent number of the *Journal des Sages-Femmes* relates a case in which a woman was unconsciously and painlessly delivered of a child during a movement of the bowels following an enema administered to relieve constipation which had existed for five days. The child was delivered in the chamber vessel, but was, notwithstanding, saved, and the mother made a good recovery. The mother had three years before given birth to a child in an equally painless manner.

BACTERIOLOGICAL NOTES.

[THE notes appearing in this department are abstracts or translations prepared expressly for MODERN MEDICINE AND BACTERIOLOGICAL REVIEW, from original sources.]

Influence of Tobacco on Microbes.—M. Tussau recently reported (*Lyon Méd.*) three cases of tuberculosis of the tonsils, in all three of which the patients had been addicted to the very free use of both alcohol and tobacco. The reporter expressed the opinion that the use of alcohol and tobacco is a predisposing cause of a tuberculous infection of the tonsils. In one case in which the disease was cured, by thorough cauterization of the tonsils, the patient, an inn-keeper, remained well for some little time, but on resuming his bad habits was again attacked by tuberculosis, and died of the disease, which became general.

In still another case the local disease was cured, but the patient, a soldier, continued his bad habits, and a few months later died from a return of the malady. These observations afford the best possible evidence against the theory that tobacco is in any way advantageous as a germicide. Of all the various pathogenic microbes which attack the body, those of tuberculosis are perhaps the most easily destroyed, yet the anti-septic quality of tobacco, even when used to a great excess, as in the cases reported by M. Tusseau, has no influence whatever in preventing their development in the mouth, but actually encourages the growth by producing an irritated and inflamed condition of the tonsils.

How to Stain the Flagella of the Cholera Bacillus.—Klein employs the following method for staining the flagella of the cholera microbes found in the flocculent matter of rice-water stools: The flocculus is placed in a mixture consisting of absolute alcohol and aniline water and gentian violet. (This consists of 100 c.c m. of a saturated solution of aniline in water, and 11 c.c m. of an alcoholic solution of gentian violet.) After staining the flocculus, it is washed well in distilled water, the water being frequently changed until all the excess of stain is removed. A small portion of the mass is then spread out by pressure between two cover-glasses. The cover-

glasses are separated and filled, and after being allowed to dry, are mounted in balsam. If preferred, dry cover-slip preparations may be made in the usual way and then stained as above directed.

The bacilli proper have a deep violet color. The flagella have a lighter violet, but sufficiently well defined for photographing. This method fails in bacilli from cultures, which leads to the conclusion that there is some solution in the stool which acts as a mordant, rendering staining impossible. The flagella are often found free in tufts and mesh-works, and are present in much greater numbers than the bacilli, which leads to the conclusion that an individual bacillus furnishes more than one flagellum. Loeffler, however, has shown that this is not the case with organisms obtained from a pure culture.

Leptothrix Racemosa.—In a recent paper an Italian investigator, Dr. F. Vincentini, reports a new microorganism of the mouth, which he has named *leptothrix racemosa*. According to Dr. V. this is a highly specialized organism, and in its mode of reproduction resembles both algae and fungi. It has the appearance of bunches of grapes, but this is under a high power, a 1-26 immersion lens being used.

Dr. V. thinks that the so-called microorganisms of the mouth are but phases or parts of the *leptothrix racemosa*. He finds this same microorganism in whooping-cough and other diseases; he even considers the tubercle bacillus, pneumococcus, and other microbes as being derived from the same microorganism. In his paper he illustrates some of the transitional forms.

To prepare a specimen of the *leptothrix racemosa*, the outer surface of a tooth is carefully scraped, best in the morning before a brush or food has disturbed the teeth. A small particle of this is tested in lactic acid on a slide. Then a drop of solution of iodine is added, and a cover-slip gently pressed on the specimen. About fifteen minutes are required for staining, after which it is ready for examination.

The views expressed by this investigator are too revolutionary to be accepted in the present state of our knowledge of the microorganisms of the mouth, without further study and additional evidence.

Ascites of Bacterial Origin.—A recent observer, Hamburger (*British Medical Journal*), describes a new microbe which he has named bacterium lymphagogon, and which he found in ascitic fluid taken from a dropsical patient. The microbes resemble the micrococci, slightly motile, average size, .5 to .8 μ . The observer believed the dropsy to be due to the stimulation of the capillary vessels by a toxic product resulting from the growth of the specific bacterium described. This theory, if true, establishes a new variety of ascites.

Action of Antiseptics in La Grippe Bacillus.—Dr. Klein (*British Medical Journal*) has recently made some experiments to determine the influence of certain antiseptics and other substances upon influenza bacillus. He finds that the bacillus will not grow in media having acid reaction, but grows well in the same media when alkaline, and also grows, though less vigorously, if the media is rendered neutral. A five-tenths per cent solution of carbolic acid has no influence upon the bacillus during a ten to fifteen minutes' exposure, but a one per cent solution kills in ten minutes. The bacillus is killed by drying on fine linen or thin blotting paper, but does not die when dried on flannel. It also survives when dried on gummed paper. Essence of cinnamon and oil of eucalyptus are found to be capable of destroying the bacillus.

Pneumonomycosis and Aspergilana.—Kohn recently reports in the *Deut. med. Woch.*, a case of this parasitic disease in which the fungus was apparently carried into the lungs or the nose, by forcible inhalation. This malady, formerly supposed to be a secondary disease, has been shown by this report, and others, to be primary in character. The patient's death was caused by extension of the disease in the lungs, causing thrombosis, inflammation of the pleura, and obstruction of the air cells by the development of the fungus. In necrosis, when taking place in the immediate vicinity of the growth, the patient was supposed to have contracted the disease from canaries of which she had the care, as it is a well-known fact that persons engaged in the artificial feeding of pigeons are apt to contract this

disease. Canaries and pigeons are very liable to this form of mycosis.

Tuberculosis in Carnivorous Animals.—Eberth found tuberculosis in eleven out of 400 dogs, and only one in 100 cows. An examination was made in every case for tubercle bacilli. The lung was affected in nine of the eleven dogs. Tuberculosis in the dog and cat appears to be less frequent in Germany than in Denmark.

Sputum of Whooping cough.—The results thus far obtained from bacteriological examination of the sputum of pertussis have been very uncertain. Cohn and Neumann (*Arch. f. Kinderheilk.*) think that the streptococci found in pertussis may be considered as accompanying the disease, rather than as the direct cause of the disease.

They examined the sputum of twenty-four children from one to ten years of age, all being typical cases of whooping cough, and most being in the beginning of the convulsive stage. The microbes most frequently found, were small cocci, generally arranged as diplococci. Various microorganisms were found in the sputum of these children, but in such inconstant numbers that no significance can be properly attached to them. These investigators are justly very cautious about drawing any definite conclusions from their experiments.

The Contagion of Mumps.—*Le Courier Médicale* gives some interesting information concerning mumps. The incubation period varies from eight to thirty days, but in the majority of cases the duration is from eighteen to twenty-two days. It is especially contagious during this period, but is also contagious for some time after cure. The exact length of time has not yet been determined. The parotid and testicular fluids and also the blood appear to contain a certain pathogenic organism, but as yet this point is unsettled. Hitherto the results of inoculation with this special microbe have been negative. Frequently the disease begins with tumefaction of the submaxillary glands and a severe angina. Sometimes in metastatic orchitis the swelling begins with an epididymitis.

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OPIUM LEGISLATION FOR INDIA.

WE are surprised to find our eminent contemporary, the *British Medical Journal*, opposing any interference, on the part of the government or otherwise, with the opium traffic, which has grown to be such an enormous curse to India through the encouragement offered by the government to the propagation of the poppy and opium culture. Before the introduction of the opium traffic, and its extension through government aid, the vast population of India was practically free from intoxicants, indulging only to a very limited extent in the few narcotic herbs which were indigenous to the country; but under the fostering influence of the British government, opium culture and the opium habit have increased to such an enormous extent that in India whole provinces may be said to be living in a state of chronic narcotism. The baneful influence of the drug in India has been so well recognized, not only by missionaries, but by other intelligent observers, that the English Parliament has been at last influenced to appoint a commission to investigate this gigantic evil. Notwithstanding the report of this commission, that the opium habit was in no way prejudicial to health,—a report the glaring inconsistency of which has brought down upon the committee the condemnation of the whole civilized world,—the pressure for reform

brought to bear upon the English government has been so great that the matter could not be ignored, and the agitation still continues.

The *British Medical Journal*, nevertheless, objects to this agitation of the subject, on the ground that the people of India "did not ask for it," and that India, as a country, "has shown no signs either of inclination or desire for any interference with the opium traffic or the opium habit." The argument that nothing should be done by people outside of India to effect a reform of the opium habit, which is so rapidly devastating and demoralizing that beautiful country, simply because the slaves of the opium habit have not asked to be reformed, is about as sound in relation to the opium habit, with all its dire consequences, as it might have been in relation to the practices of wife-burning, drowning children in the Ganges, crushing superstitious multitudes under the car of Jugernaut, and like inhuman and demoralizing customs which once prevailed in India. Indeed, it was a constant argument of the East India Company against the efforts of the first missionaries, that the people of India had not asked to be reformed, and that their work was wholly gratuitous. This argument, if sound, would entirely prevent an effort on the part of the people of civilized countries to effect any change in the degraded condition of the vast multitudes of human beings who inhabit Central Africa and other uncivilized portions of the globe.

There is another consideration which Mr. Ernest Hart seems to have overlooked, in making up his conclusions in relation to the question of opium legislation: The same principle which he announces for India would apply equally well to East London, the Fish Market, and other portions of the city which are inhabited by people who have no natural inclination toward cleanliness or the observance of sanitary laws. Suppose the

city of London should do nothing toward compelling these people to be clean and sanitary, how long a time would elapse before we should witness another plague perhaps as deadly in its ravages as that which depopulated London just before the great fire? Therefore the English government thinks it proper to enact and enforce the sanitary laws necessary to prevent such a catastrophe to the people of the East End and the Fish Market, not only for their own benefit, but that they may not become a source of danger to their neighbors, since infectious maladies born of filth, when once started upon their career, do not confine themselves to the boundaries of their origin, but extend to adjacent territories.

The very same principle applies to the opium habit and traffic in India. Europeans living among the natives of India are led to adopt the opium habit to a greater or less extent, in the same way that the greater part of the civilized world has adopted the use of tobacco from the example of the naked savages whom Columbus reported to have seen "twist the huge leaves together and smoke like devils." So that India, as regards opium-raising and opium-using, is a sort of plague-spot from which extends a moral contagion to the whole world. Every one familiar with the history of the relations of the English government to China for the last quarter of a century, will recognize this principle, in relation to China at least; since it is well known that the English government forced the government of China to open its doors to the opium traffic for the express purpose of furnishing a market for the use of the poppies raised by the native Indian farmer.

It is to be hoped that the time may come when the powerful influence of medical men and medical journals will be in favor of the suppression of the habitual use, not only of opium, but of all other narcotics and intoxicants. So long, however, as so large a proportion of the pro-

fession are addicted to the habitual use of a narcotic in the form of tobacco, it is scarcely to be expected that the use of either opium or alcohol will be universally denounced, or the extension of the narcotic habit very strongly opposed.

TO RELIEVE AN ASTHMATIC ATTACK.

THE immediate cause of the distress experienced by an asthmatic patient struggling for breath, is the contraction of the bronchioles, which prevents the egress or expulsion of the air from the lungs without great effort. This spasmodic contraction of the bronchioles is due to irritation of the pneumogastric nerves. This may be the result either of irritation of the peripheral ends of the pneumogastric, irritation of this branch of the pneumogastric distributed to the lungs, resulting from a diseased condition of the bronchial mucous membrane; or, it may be caused by some disorder of the stomach, causing irritation of the branches of the pneumogastric which are distributed throughout this organ, or by the attack upon the great sympathetic centers of the abdominal, the solar plexus, and the lumbar ganglia, resulting from prolapsus of the stomach or bowels, or a movable or floating kidney.

Temporary relief from an asthmatic attack may nearly always be obtained by causing the patient to inhale a narcotic vapor of some sort, or by administering a narcotic, by which means the pneumogastric is obtunded, and thus the spasms are made to cease. This means of affording relief is objectionable, however, as it not infrequently gives rise to a drug habit, even establishing the morphia habit. Fortunately, temporary relief may be afforded by other means, with some of which it is well worth while to be acquainted; for instance, in cases in which attacks are induced by a fit of indigestion, emptying and washing the stomach by means of a stomach tube will often

immediately cut short a most distressing paroxysm. When the attack is caused by the drag of the prolapsed stomach or bowels or floating kidney, even more than temporary relief may be obtained by restoring these organs to position by proper manipulation, and retaining them by a suitable bandage. A London supporter often answers a very excellent purpose in cases of this sort. A fomentation applied over the stomach, hot and cold sponging of the spine, and especially the application of ice compresses, or a rubber bag filled with broken ice, over the front part of the neck just above the breast bone so as to chill and benumb the pneumogastric, thus lessening its irritability, are also means which we have found of very great service in the treatment of cases of this kind.



GALVANIZATION OF THE BRAIN.

IN a recent number of the *Therapeutic Gazette*, Hare opposes the idea that the galvanization of the brain is possible in the living subject, this proceeding having been greatly recommended as a means of benefiting patients who had suffered from apoplexy in the post-apoplectic period. His argument is that the current passes through the scalp, and not through the brain substance at all. This he claims to have proved by an experiment in which, having passed a current from occiput to forehead in a dog, and finding the amount of current passed under given conditions to be $5\frac{3}{4}$ ths milliamperes, he trephined the dog and placed one of the poles in the brain substance by means of a needle, and found that the amount of current passed was only $3\frac{3}{4}$ ths milliamperes. He argues from this that, since the resistance in the scalp is less than that through the brain, the brain would not receive any portion of the current passed through the head from forehead to occiput.

With all the respect due to this distinguished author, we must certainly differ from him in his conclusion. The experiment certainly does not satisfactorily prove that the resistance through the brain is greater than that through the scalp. It would rather prove to our mind that the amount of the surface contact between the needle and the brain substance was less than that between the wet sponge and the scalp, consequently the resistance would be greater; but, granting that the actual resistance through the brain substance is greater than that through the scalp from occiput to forehead, this by no means proves that the brain receives no part of the electrical current when passed through the head. It only proves that it would receive a lesser amount of current than that which passes through the scalp, since during the application of electricity in the manner described, one sponge electrode being placed upon the occiput and another upon the forehead, a great number of electrical paths would be formed; the whole head is a conductor, and the greater part of the current passes through the lines of least resistance by lesser portions of current passing through all other parts of the brain as well, the amount of electrical current being inversely proportioned to the resistance. The fact that the electrical current, when applied in the manner described, does penetrate the brain substance is clearly shown by two well-known clinical facts:—

1. The effect of the current upon the optic nerve, producing powerful luminous sensations.
2. The giddiness due probably to contraction of the blood vessels of the brain. This may be carried to the extent of complete loss of equilibrium. The writer has, in several cases, known patients to pitch forward upon the floor during the application of an electrical current, as the result of an unusual susceptibility to the current, or the application of an unusu-

ally strong current. When pursuing the study of therapeutics with the late George M. Beard, the writer frequently noticed these cerebral effects in the application of the galvanic current in the form termed by Dr. Beard "central galvanization," and no doubt the same observation has been made by numerous others.

POISONING FROM SAUSAGES.

THE frequent reports published of cases of poisoning resulting from the eating of sausages would seem to have afforded sufficient evidence of the dangerous character of this article of food so popular among certain classes.

The *Journal d'Hygiene* recently summarizes some of the facts which have been published in late years, which clearly indicate the noxious and dangerous character of sausage as an article of food. We briefly abstract the article referred to, which is from the pen of Chas. Morot, Municipal Veterinary Surgeon at Troyes, France:—

"In Belgium, in 1892, forty persons were made dangerously sick from eating the flesh of a diseased calf, and several died.

"Last year (1893) an epidemic of trichinosis prevailed at Prealle, from eating pork sausage, in which thirty-nine persons were sick, of whom thirteen died.

"The present year a number of cases of illness occurred in the village of St. Tronc, giving symptoms of poisoning as the result of eating sausage made from horse flesh. Six persons died."

"The use of sausage has long been opposed by hygienists. It is important that the public should be inspired with as intense a disgust as possible against the use of this food."

This statement was made by Dr. Pappenheim, of Berlin, in 1858, relying upon the following arguments:—

Sausage is a favorite object of adulteration. It frequently contains decom-

posing flesh, flesh containing trichinæ, tendons, and other indigestible portions of flesh, decaying viscera,—in a word, everything which could not pass inspection. Pappenheim related the following circumstance which occurred in London: "One day Dr. Aldis asked the Justice to order the destruction of a quantity of decaying and disgusting flesh, of which a butcher intended to make sausage. The butcher did not deny his purpose, but alleged that it would be impossible to continue his business if such flesh should be condemned, as he could not compete with other butchers, since all the butchers in the city employed flesh of the same sort."

Unquestionably it is the general practice of butchers to work up into sausages various odds and ends which could not otherwise be sold. Sausage is, perhaps, of the many disgusting and unwholesome articles of food which appear upon modern tables, the most unwholesome and disgusting of all.

Death from Football.—The frequency with which deaths are reported from football is coming to be something alarming. If football were anything other than a pastime, a game for amusement or recreation, we feel sure that some police regulation would be very soon formulated for the restriction of the rude procedures which are certain to result frequently in maiming accidents, and not infrequently in fatalities. More than half a dozen deaths from football have been reported during the last season. The *British Medical Journal*, in commenting upon the recent death of the talented son of Dr. Sylvester Richmond, of England, as the result of a blow in the abdomen, received while playing a game of football, remarks that this game is always attended by risk, and that accidents similar to that by which this young man was carried off are not infrequent. The game, in the opinion of the writer,

is one which belongs to barbarous times and a barbarous people, and has no proper place in a civilized country. It is very satisfactory to note that some of the very best schools in the country have prohibited this game as too rude and uncivil to be played by college students.

fact that the Bedouins of the desert, where flies are much less abundant, are much less afflicted by eye diseases."

Flies as Germ Carriers.—Prof. Fuchs has been investigating the cause of Egyptian ophthalmia, and writes as follows (*Medical Age*) concerning the results of his observations of the relation of flies to the propagation of this disease: "Aside from communication of the disease through fingers, washing, and the like, it is probable that flies also aid in its spread. The fly-pest in Egypt is great. Though well prepared beforehand by books of travel, I was astounded when called upon to confirm the accounts with my own eyes. A few small children were playing before the hut or in the fields; approaching the youngsters, one fancies, and often believes, that they have black rings painted around their eyes; but on coming close, he sees that the black rings are dense circles of flies seated along the edges of the lids, and the inner angle of the eye. They seek for food in the secretion without encountering any disturbance, for the children do not disperse the pests, knowing that others with unsatiated appetite would at once take their places. In summer the situation is, of course, much worse, and the faces of the children are said then to be quite covered. As the flies pass from one eye to the other, it is natural to assume that they are capable of conveying the secretion. Lucian Howe caused flies to pass over a gelatin plate, when from every footprint a culture of germs was obtained. When the flies had been in previous contact with a diseased optic, the same micro-organisms developed on the gelatin culture as were found in the secretion of the eye. Howe also calls attention to the

Microbes in Mineral Water.—The general diffusion of knowledge respecting the dangers which lurk in ordinary drinking water, especially that furnished at some of our great metropolitan centers, as New York, Chicago, and Boston, not to mention many smaller cities which are no better provided for in this respect, has led thousands of persons to discard the use of hydrant water for drinking purposes, and has created an enormous demand for mineral waters of every description. The idea seems to be generally prevalent that bottled mineral waters are always safe, but an examination of this subject, recently made by eminent English authorities, has shown that mineral waters are by no means so free from germs as is generally supposed. In some specimens of mineral water examined, from three to ten thousand microbes were found in each drop of water. This was found to be true of sulphur as well as other mineral waters which proves conclusively that carbonic acid gas, while destructive to some microbes, does not by any means destroy them all; and that it does not destroy all dangerous germs is proven by the fact that some of the water examined contained the bacillus coli communis, a microbe which finds its original habitat in the colon of human beings and other mammals. This fact also proves conclusively that the water was contaminated with faecal matter either from vaults, sewers, or barnyards. It is scarcely safe nowadays to make use of any other water for drinking purposes than distilled water or water which has been thoroughly boiled and filtered.

AMONG the many curious relics of Dr. Jenner which are now on exhibition in London are a few hairs from the tail of the first cow from which virus was obtained for vaccine purposes.

REVIEWS.

The Limitations of the Use of the Pessary.—By Hunter Robb, M. D., Baltimore.

In opposition to the common practice respecting the use of pessaries, Dr. Robb remarks very sensibly, "Granted, then, that a pessary may sometimes be useful where a displacement exists, the condition by itself does not necessarily warrant its employment. It takes a great deal of practice and experience before a physician becomes able to decide intelligently as to the position of the uterus; and to make a correct diagnosis as to the condition of the lateral structures is a much harder task." Another remark with which we entirely coincide is the following, "There exist but few cases of anteflexion or anteversion of the uterus which require the use of a pessary. . . . To attribute the patient's suffering to a slight, or even well-marked displacement of the uterus is, to say the least, taking a great deal for granted." The author's views of the use of the pessary are indicated by the following proposition with which we entirely agree: "(1) If the displacement is due to inflammatory adherent adnexa, in the majority of instances the pessary would be of no use, and the removal of the diseased structures will be indicated. (2) If the symptoms can be demonstrated to be a result of the position of the uterus *per se*, then we can resort to other measures which generally will prove, in the long run, more satisfactory, and which at the same time are free from the dangers which a pessary might produce. In cases, then, in which the pessary was formerly almost universally used for the correction of a displacement of the uterus, we begin by almost entirely limiting ourselves to hygienic measures for from six weeks to six months."

Cases which are not relieved by the

pessary used in the manner suggested by Dr. Robb, or by other measures used in connection with the pessary employed in this manner, are not likely to be relieved by the pessary at all, and are suitable cases for operative procedures. The continued use of the pessary is a procedure to be most earnestly deprecated, and is productive of perhaps more mischief than any other unwise gynecological procedure.

Appendicitis.—By J. B. Murphy, M.D., Chicago, Ill.

In this paper the author gives an original report of an analysis of 141 hysterectomies and laparotomies for appendicitis, all the cases having come under his personal observation. The author claims that the operation should be performed in all cases in which the following symptoms occur:—

1. Cellular attack of pain over appendix.
2. Always nausea, frequently vomiting.
3. Elevation of temperature.
4. Local tenderness in the position occupied by the appendix.

Dr. Murphy argues that an operation should be performed at the earliest possible moment after the onset of the above symptoms, for the following reasons: (1) Because at that time the inflammation is limited; (2) The appendix is easily located and removed; (3) The time for rupture into the general peritoneal cavity has not occurred; (4) Gangrene of the bowels has not taken place; (5) Matterstock states that upward of fifty per cent of the mortality from diseases of the appendix occur before the sixth day. It is therefore evident that the operator who waits to operate as late as the sixth day will lose fifty per cent of cases that would have terminated fatally without an operation. The amount of mortality in the first hundred cases was not more than seven per cent, certainly a very satisfactory result.

As regards differential diagnosis the author says: "Can we say from the symptoms, 'This is catarrhal appendicitis,' 'This is peritonitis?' — Emphatically no."

Dr. Murphy has placed the profession under renewed obligations to him in the publication of this admirable paper which gives, in such lucid detail, symptoms of each case and the pathological conditions found. An admirable basis is here afforded for the critical study of this malady and the best methods of dealing with it. The present tendency of opinion is decidedly in favor of an early operation in these cases, at least in recurrent cases.

Relation of Typhoid Fever and the Coli Bacilli.—Dr. Edmund J. McWeeney, Professor of Pathology and Bacteriology, and Examiner in Pathology, to the Royal University of Ireland, reports a case of fever which was clinically undistinguishable from typhoid fever, but in which a post mortem examination disclosed no other infectious microbe than the bacillus coli communis, a pure culture of which was obtained from the spleen and mesenteric glands.

Dr. Mc Weeney has also made a study of the microbic cause of an epidemic of typhoid fever which recently occurred in the village of Waterford, England. Parietti's, Globi's, and other methods identified the microbes as those of Eberth; while the fermentation test of Dr. Theobald Smith, of Washington, indicated on the contrary that the bacillus was not that of Eberth but was the bacillus coli, since it produced decomposition of lactose, although not quite so freely as another specimen of the bacillus coli with which it was compared. The bacillus did not, however, produce decomposition of glucose, as does the bacillus coli.

The evidence afforded by these observations is, that a bacillus possessing the

characters of both Eberth's bacillus and the bacillus coli is capable of producing typhoid fever, and that a disease undistinguishable from typhoid fever may be produced by a microbe which is unquestionably the bacillus coli. These facts, taken with other known facts, indicate that typhoid fever may result from either Eberth's bacilli, the bacillus coli, or bacilli which present the characteristics of both these microbes. Whether the bacillus coli is derived from Eberth's bacillus, or Eberth's bacillus from the bacillus coli, or whether these microbes are wholly distinct, with intermediate species, is a question which the bacteriologist may not be able to settle for some time to come; but there seems to be now no room for question that typhoid fever may result from infection by either bacillus coli, Eberth's bacillus, or from bacilli which possess the characteristics of both.

The immense sanitary importance of these facts is obvious. The infection of water, either by human faecal matter, or by that of any other mammal (for the bacillus dwells in the colon of every mammal), may, under favorable circumstances, become a source of typhoid fever; so that it is useless to expect to find a preceding and related case of typhoid fever in every instance of typhoid outbreak.

A Case of Double Vagina, with Operations.—By Hunter Robb, M. D., Baltimore.

Dr. Robb, the eminent Associate in Gynecology in the Johns Hopkins Hospital, reports in this paper an exceedingly interesting case in which a double vagina was restored to a normal condition. The operation consisted simply in dividing the septum with scissors from without inward, and packing the vagina with gauze. The patient left the hospital on the fifth day.

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RECIPE FOR A RELIABLE INFANT FOOD.—Beat one heaping teaspoonful of flour with half a medium sized coffee cup ($\frac{1}{4}$ pint) cold water until perfectly free from lumps. Add this to one and a half cups ($\frac{3}{4}$ pint) boiling water in the inner vessel of a double boiler; stir well, cover, and cook for ten minutes by keeping the water boiling in the outside vessel.

Take out the inner vessel and set on table; add at once one and a half cups ($\frac{3}{4}$ pint) cold water, then mix in a scant half teaspoonful Maltine Plain and stir thoroughly with the same teaspoon, cover and let stand fifteen minutes. Then put the inner vessel back into the boiling water in the outer vessel and cook fifteen minutes. Strain and keep well covered in a cool place.

In case of diarrhoea, use two tups of boiling water instead of one and a half, cool off with one cup of cold water instead of one and a half, and allow to stand three minutes instead of fifteen.

This food should be mixed with fresh or Pasteurized milk in equal proportions, unless otherwise directed by the physician. It should be prepared daily, and the instructions must be strictly followed, otherwise the Maltine may not properly prepare the flour for the stomach of the infant.

Fine barley flour may be substituted for wheat flour if advised by the physician.

PIPERAZINE AS A SOLVENT FOR URIC ACID.—Dr. Rosenthal recently reports some experiments upon animals after producing deposits of uric acid in the pericardium, bladder, and kidneys, and when administering Piperazine by the mouth, or subcutaneously, in doses of about twelve grains. After a period of two to seven days the animals were killed. A complete disappearance of the uric acid deposits was observed in all those animals which had been treated with the remedy, while other animals in which similar deposits had been produced and which had been treated with phosphate of sodium, lithia, and borax, exhibited collections of uric acid in the different organs; albu-menuria was not observed in any case.

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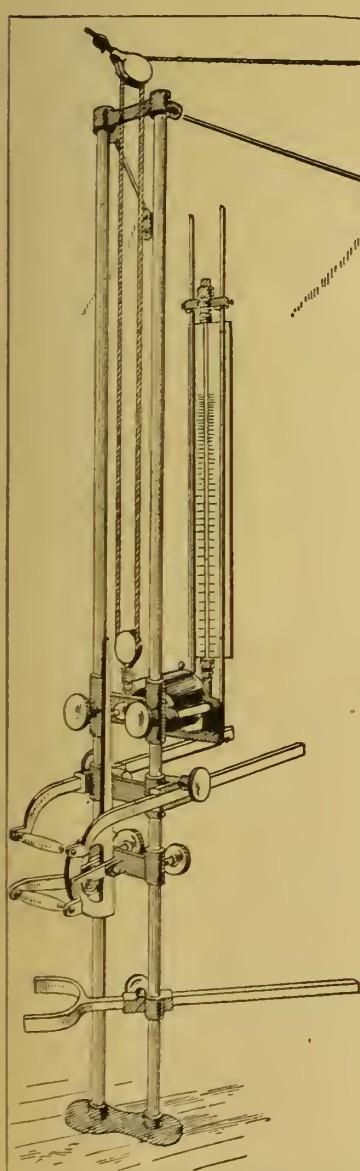
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Fig. V—Semi-Reclining.

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- 3rd. Obtaining height of $39\frac{1}{2}$ inches.—Fig. VII.
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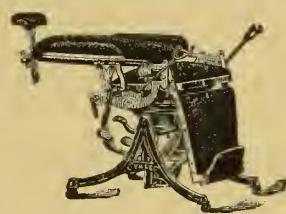


Fig. XVII—Dorsal Position.

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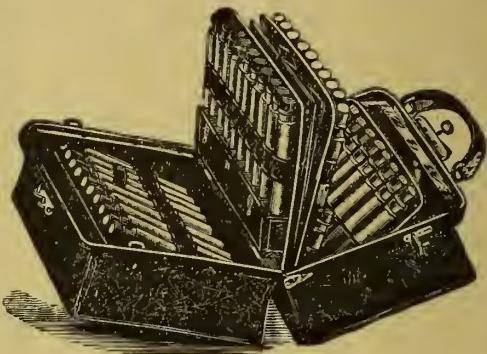
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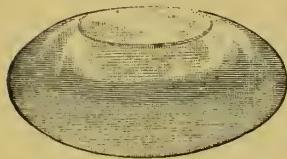
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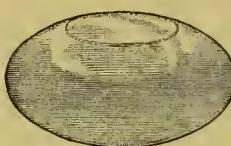
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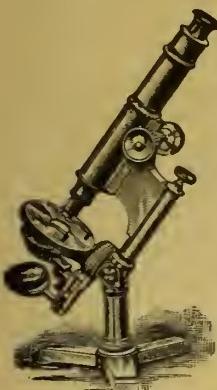
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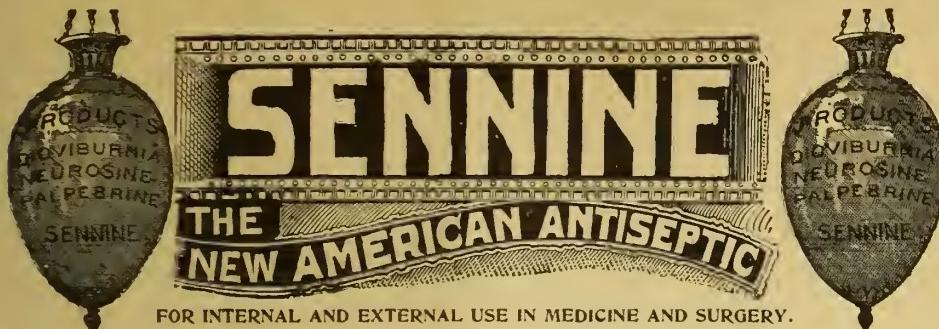
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BACTERIOLOGICAL REVIEW.

VOL. IV.

BATTLE CREEK, MICH., U. S. A., NOVEMBER, 1894.

NO. 11.

ORIGINAL ARTICLES.

AN EXHALATION TUBE FOR LUNG DEVELOPMENT.

J. H. KELLOGG, M. D.,

Superintendent Battle Creek (Mich.) Sanitarium.

THE advantage of increasing the intrathoracic pressure during exhalation as a means of increasing the respiratory area has been long recognized by the profession, at least by those members of it who have had much to do with the treatment of pulmonary ailments. Prof. Walden-berg, the eminent professor of lung dis-eases at St. Petersburg, many years ago devised for this purpose an apparatus, in the use of which the patient breathes into a cylinder against a certain degree of pres-ure, the amount of which may be regu-lated to suit the individual case. Many other forms of apparatus have been de-vised for this purpose.

A few years ago, an expensive appara-tus called a pneumatic cabinet was intro-duced to the profession, for the treatment of pulmonary ailments, one of the most important applications of which was in-tended to increase expiratory pressure. I have employed the pneumatic appara-tus of Walden-berg at the Battle Creek (Mich.) Sanitarium for the last fifteen years, and have also made use of the pneumatic cabinet, and of other forms of apparatus for regulating inspiratory pressure, but I long ago learned that costly apparatus is by no means essential for this purpose. Practically the same thing was accomplished by Dr. Fitch, a famous specialist in pulmonary diseases, who practiced in the city of New York more than fifty years ago. He required all his patients to breathe at stated inter-valls during the day, and for definite times,

through a small glass tube which he pro-vided for the purpose.

The natural respiratory area is said to be about two thousand square feet in an adult person; that is, if the mucous mem-brane lining the air-passages and cells of the lungs were spread out upon a level surface, it would cover an area of two thousand square feet. In various forms of diseases this area is greatly limited, and consequently the blood-purifying process which takes place in the lungs is proportionately impaired. In pneumonia, for example, the air cells of one lung may be entirely filled with exudate. In such a case one half the normal respiratory area is temporarily obliterated. Pleurisy may limit the respiratory field by causing ad-hesions. A suppurating pleurisy may result in the complete collapse of one lung, and ultimately of the chest wall, thus permanently lessening the respi-ratory field.

An unresolved pneumonia may lessen the respiratory field one fourth or more of its entire area.

In consumption the respiratory field is lessened by tubercular deposits. There is also, in consumption, a marked ten-dency toward lessening the activity of the respiratory muscles, and to the gradual increase of the rigidity of the costal car-tilages resulting in diminished movement of the chest. A similar tendency is the natural result of all sedentary employ-ments, especially such as involve a stooping posture. For all cases of this sort, and other similar cases, the breathing-tube affords a most excellent means of antagonizing a morbid tendency, and is one of the most valuable and efficient curative measures which can be employed.

The two movements of respiration—inhala-tion and exhalation—are, in health, of slightly unequal length, inspiration being a little more prolonged than ex-piration. This is well shown in the ac-companying pneographic tracing (Fig. 1)

obtained by means of an original device of the writer, described in a paper entitled, "Graphic Methods of Recording Diseased Conditions of the Lungs," etc., read before the American Climatological Society, at its meeting in Denver, Colo., in September, 1890. In certain forms of disease the natural respiratory

In such morbid conditions as pulmonary tuberculosis, chronic pleurisy, unresolved pneumonia, and imperfect development of the lungs from lack of proper muscular activity, forced respiratory movement is highly salutary for the very reason that it is injurious in emphysema, provided, of course, that it is not carried

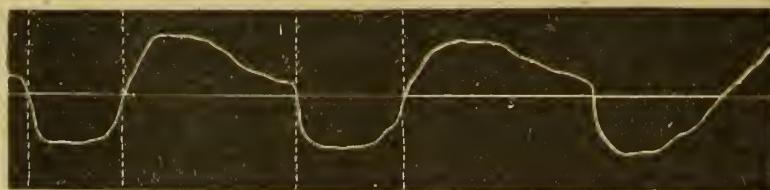


FIG. 1.—Pneographic Tracing,—Healthy Woman.

rhythm is disturbed, the inspiratory movement becomes short and shallow, or the expiratory movement becomes abnormally prolonged. The quick, gasping breath of the consumptive is an illustration of this. Any morbid condition which diminishes the respiratory field is likely to produce shortness of breath. This shortness of breath in obese persons is in part due to the diminution of the respiratory field through the accumulation of fat in the chest cavity. In certain forms of disease, as in emphysema, the expiratory movement is very greatly prolonged, as shown in Fig. 2, a tracing obtained by the author's pneograph from a patient suffering from chronic bronchitis. In emphysema, prolonged expiratory movement is due to the diminution in the size of the small air tubes, requiring increased effort and a longer time for

to the extreme degree which is seen in cases of chronic emphysema.

The increase of pressure desired may be obtained either by the Waldenberg apparatus, or by some other form of pneumatic apparatus, by the pneumatic cabinet, or by a simple breathing-tube such as was used by Dr. Fitch many years ago. It has been the practice of the writer for more than twenty years, to place in the hands of patients suffering from diseases requiring lung development, a small glass tube of proper caliber, with directions for using it a certain number of times daily, and for a given number of minutes each time. This method has been found somewhat inconvenient on account of the necessity of adapting the size of the tube to the requirements of each individual case, and also the necessity of changing the tube to meet the changed require-



FIG. 2.—Pneographic Tracing,—Woman with Asthma and Emphysema.

the expulsion of the air than in normal individuals. When carried to an extreme degree, as in emphysema, this action is, of course, detrimental, as the air cells become so over-stretched that their walls are thinned and the blood vessels which ramify through them are obliterated, thus lessening the respiratory field and, proportionally, the efficiency and activity of the lungs in blood purification.

ments of the patient during his progress toward recovery. A variety of inhaling tubes have been proposed to meet this exigency. A very excellent device for the purpose is that of our friend, Dr. Denison, of Denver, which includes a chamber in which medicaments of various sorts can be placed to be inhaled at the same time that the exhalation is being practiced.

One purpose of this article is to call attention to a simple device, shown in the accompanying cuts (Figs. 3 and 4), which the writer has recently perfected to be used for exhalation alone. It consists simply of a tube closed at one end and perforated by four holes in the side, the combined area of the four openings being equal to that of the large opening in the tube. A screw thread is cut upon the distal end of the tube for about half an inch. By means of a sleeve screwed upon the distal end of the tube, the four openings may be closed successively, thus diminishing the size of the outlet, so that when a person breathes through the tube, the air may pass out through one, two, three, or four openings, as may be desired. The length of time required for emptying the lungs, and the amount of pressure required to empty the lungs in a given time, may thus be conveniently regulated, and the physician can, in prescribing for his patient, direct him to adjust the instrument so as to exhale through one, two, three, or four openings.

Another advantage of the greatest possible importance which is to be gained by the use of the expiration tube, is based upon the physiological fact that each inspiratory act stimulates reflexly the succeeding and later phase of the respiratory movement; for example, inspiration, through the stimulating effect of the incoming current of air upon nerve endings in the air passages, through reflex influence upon the expiratory center, brings into active play the force by which the air is expelled from the lungs. The effect of the outgoing current is precisely the opposite, bringing into active operation the inspiratory mechanism. The more forcible the air current the greater the impression made, and consequently the more powerful the reflex effect and the more vigorous the succeeding action. Thus a forcible exhalation is naturally followed by a more than ordinarily deep and vigorous inspiration. It is thus apparent that thoracic pressure resulting from forcible exhalation through the breathing-tube must be a powerful means of stimulating reflexly the act of inspiration, and hence the negative inspiratory pressure, especially if pains are taken to perform the act physiologically; namely, by breathing through the nose.

The use of the breathing-tube is thus shown to be valuable, not only as a means

of distending the air cells by increasing the negative pressure of inspiration, and thus antagonizing any disease process by which the respiratory field is lessened, but also by securing a fuller and more complete expansion and filling of the lungs in inspiration.

Still another advantage which may be gained by the use of the breathing-tube, and one which is of no small value, results from its influence in modifying the relative respiratory pressures, viz., the relation between the pressure within the air passages in inspiration and that of expiration. Examinations of the expiratory pressures by means of Waldenborg's pneumatometer, which consists of a U-shaped mercurial manometer with a scale arranged so that both positive and negative pressures can be measured, have shown that various diseases materially modify



FIG. 3.—Breathing-tube.

respiratory pressure, and in different ways according to the different morbid changes present. In diseases in which expansion of the lungs is impaired,—that is, in cases in which the respiratory field is diminished by means of pleuritic adhesions, exudate in the air cells, tubercular infiltration, or ossification of the cartilages, anything, in fact, which interferes with expansion,—the inspiratory power is diminished; while, on the other hand, in emphysema and asthma, expiration is abnormally prolonged and expiratory pressure is diminished; hence the feeble voice and weak cough. It is evident that the breathing-tube should not be used in cases of emphysema and asthma.

The following experiments were under-



FIG. 4.—Exhalation Tube in Use.

taken to show the precise influence of the breathing-tube upon the expiratory pressure and movement:—

Experiment 1.—This experiment was simply a repetition of that of Donder's, which consists in placing a U-shaped manometer in one nostril, keeping the other nostril open and the mouth closed while breathing quietly. The change in the level of the mercurial manometer showed a negative pressure of minus one millimeter during inspiration, and a positive pressure of two to three millimeters during expiration.

Experiment 2.—The purpose of this experiment was to determine to what ex-

Experiment 3.—The purpose of this experiment was to determine the effect of diminishing the exit-area by one opening, adjusting the breathing-tube in such a manner as to cover one of the four outlets. Two trials were made, as follows:—

(a) Maintaining the pressure at the same point as before, namely, ten millimeters, it was found that the time required for expiration was eight seconds.

(b) Managing the expiration so as to empty the lungs in the same time as in Experiment 2; namely, five seconds, it was found that the pressure was raised to twenty millimeters.

Experiment 4.—In this experiment the

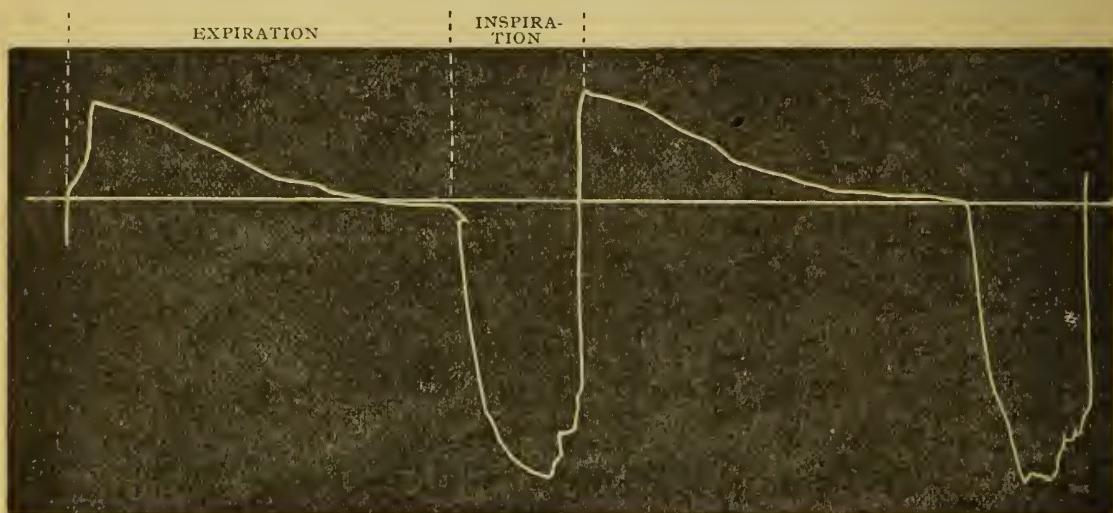


Fig. 5.—Pneographic Tracing Taken while Using the Breathing-tube, Showing Prolonged Expiration and Reinforcement of Inspiration.

tent the expiratory pressure is increased while breathing through the tube with all four of the exit apertures open. The experiment was made with a person whose normal rate of breathing was found to be sixteen per minute. It was, of course, necessary to take into account the time occupied in emptying the lungs. The air was forced through the tube at such a rate as to completely empty the lungs in five seconds, the time occupied in expiration being about three times as long as usual. Placing the tube, properly adjusted, in the mouth, the manometer was also connected with the mouth. After taking an ordinary respiration, the nostrils were closed, compelling all the air to escape through the breathing-tube. The pressure indicated upon the manometer was ten millimeters.

number of outlet openings was diminished to two. Two trials were made, as in the preceding experiment, with the following results:—

(a) With the pressure maintained at ten millimeters, the time required for expiration was twelve seconds.

(b) In emptying the lungs in five seconds, the pressure was found to be raised to thirty-eight millimeters.

Experiment 5.—In this experiment the breathing-tube was so adjusted as to leave but one opening. In two trials made, the following results were obtained:—

(a) With the pressure at ten millimeters, eighteen seconds were required for expiration.

(b) In emptying the lungs in five seconds, the pressure was found to be raised to sixty millimeters.

Experiment 6.—In this experiment the expiration tube was connected with the author's pneograph in such a way as to give a graphic representation of the influence of the tube upon the movements of respiration. The tracing obtained, as shown in Fig. 4, illustrates the influence of the expiration tube in reinforcing inspiration at the same time that it prolongs expiration and increases expiratory pressure. The elevation of the curve during expiration is, of course, diminished, since the increase of expiratory pressure against the diaphragm of the pneograph diminishes with the increase of pressure within the air passages.

The exhalation tube may be even more useful as a preventive measure than as a means of cure. Consumption begins with weak lungs. A hard cold, a pleurisy, a pneumonia, an attack of influenza or la grippe, leaves the lungs in a weak condition, unable to defend themselves against the microbes which cause consumption. These germs find a foothold, and thus the disease begins. Many persons, through lack of active muscular exercise, never develop proper lung vigor. A

person who gets out of breath easily in going up stairs, or one who cannot without great inconvenience run a few rods to catch a train or a street-car, has a weak chest, and ought to give the matter of chest development immediate attention. All persons who have suffered from pneumonia, pleurisy, or any other serious lung affection, should also give special attention to lung gymnastics. A person who has consumption in its incipient stages may find in lung gymnastics, persistently employed, a cure for his disease. The beneficial effects of an elevated climate are chiefly due to the constant lung and chest gymnastics which result from the rarefaction of the air.

How to Exercise the Lungs.—There are many ways of bringing the lungs into active play, as ordinary exercise, gymnastics, etc.; but the most efficient means is the expiration tube.

Both the expiratory and the inspiratory

muscles of respiration may be strengthened by using the expiration tube in the following manner: While lying upon the back and using the exhalation tube (see Fig. 6), place a bag of shot weighing three or four pounds, a book of equal weight, or any similar object, upon the abdomen just below the pit of the stomach. At each inspiration, lift this weight, and thus the inspiratory muscles will be strengthened, while the expiratory muscles are strengthened by breathing out through the expiration tube. This exercise should be taken from five to fifteen minutes three or four times a day, and will have the effect to rapidly increase the breathing capacity. Lung gymnastics



FIG. 6.—Exhalation Tube in Use in Chest Gymnastics.

are not only a benefit to the lungs, but are also of great value in diseases of the heart, stomach, and liver, and in congestion of the brain.

In using the instrument the patient is instructed to take a deep breath through the nose and then breathe out through the breathing-tube. The tube is light, being made of hard rubber and of the size shown in the cut. It may thus be conveniently held in the mouth while the patient is reading, walking, riding, or otherwise engaged, without in the slightest degree interfering with any of his occupations. It may be used for as many hours daily as may be desired in any given case. The weak point in many of the remedies which are employed in the treatment of chronic diseases of the lungs, as well as other forms of chronic disease, is to be found in the briefness or infrequency of the applications which, excellent in themselves, are allowed to operate

upon the body only for so brief a period that little influence is derived from them.

It is not claimed that this little instrument will cure consumption, or that it is a panacea for any malady. It is simply a convenient means of increasing the intrathoracic pressure during respiration, and thus promoting the expansion of the air cells and so antagonizing the progress of those maladies in which there is a tendency to a diminution of the respiratory field.

SUMMARY OF A STUDY OF FORTY-SIX CASES OF LOCOMOTOR ATAXIA.

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THESE forty-six cases, the most important symptoms of which are given below, in the order of their relative frequency, have been examined by the writer at the Battle Creek Sanitarium, where they applied for treatment. The majority of them have been examined during the past two years, though a few were in the institution previous to this time.

Of the forty-six cases, forty-five were males and one female (an unusually small percentage). A history of syphilis was given in twenty-four cases out of thirty-four. The remaining ten of the thirty-four had either had gonorrhœa or gave other evidence of possible exposure to syphilis. Of the remaining twelve cases of the forty-six, syphilis was either denied or this point was not determined in the history. Of the cases which gave a history of syphilis, from two years to thirty years intervened between the primary venereal disease and the initial symptoms of locomotor ataxia. In most cases this interval varied from ten to fifteen years. A history of exposure to wet and cold was given in six cases.

The majority of the cases came from the middle and higher walks of life. In twenty-three cases the disease first showed itself between the ages of thirty and forty years; in eighteen cases, between the ages of forty and fifty years; in four cases, between fifty and sixty years; in one case the disease began before the age of thirty years.

The initial symptoms, as given by the patients in the history of their cases, are

as follows: In twenty-eight cases, there was severe pain in some part of the body, usually described as "rheumatic;" in three cases, gastric crisis; in two, laryngeal crisis; in three, incoördination in the lower limbs. In the remaining cases, the initial symptoms consisted of one or more of the following:—

Various paræsthesiæ in the extremities, diplopia, partial blindness, vertigo, difficulty in emptying the bladder, loss of sexual function, a general feeling of weariness,—frequently without exertion,—and digestive disturbances.

The most important symptoms are given below in the order of their relative frequency. The list is somewhat lengthy, and the question will naturally arise as to whether some of these symptoms which occur less frequently are not accidental, and so should not be considered as part of the symptom-complex which characterizes the disease. The writer is of the opinion that all these symptoms may be related to underlying pathological conditions which belong strictly to the disease under consideration.

There is perhaps no other organic disease of the nervous system which presents with itself so many and such varied symptoms as does locomotor ataxia. There is scarcely an organ in the body, the function of which may not be disturbed by this disease, affecting some part of the nervous system. It affects cranial as well as spinal nerves. To consider it as a systemic disease of the spinal cord only, is to limit it to a much smaller field than it really occupies. Other parts of the nervous system may be and are affected by it, and it would seem more natural and in keeping with clinical and pathological facts to consider it, as some writers are already disposed to do, a disease of the general nervous system.

The symptoms of the forty-six cases, tabulated in the order of their frequency, are as follows:—

- | | |
|---|----|
| 1. Knee-jerk absent..... | 42 |
| 2. Severe paroxysms of pain..... | 41 |
| In fourteen of these the severe pains were in the arms, trunk, and legs; in thirteen, in the legs alone; in twelve, in the trunk and legs; in one, in the arms alone; and in one, in the trunk alone. | |
| 3. Various paræsthesiæ, as numbness, prickling, formication, etc..... | 41 |
| In twenty-five of these cases, paræsthesia was confined to the lower extremities; in | |

sixteen, to both lower and upper extremities; in two, there was paraesthesia in the face as well as in the upper and lower extremities.	
4. Anæsthesiae (referring to the tactile, temperature, and pain sense, one or more being affected).....	37
In eleven of these the anæsthesia was in the upper and lower extremities; in two, in the trunk and upper and lower extremities; in two, in the face and upper and lower extremities; in the remainder, in the lower extremities.	
5. Ataxia in locomotion with eyes closed (in 40 cases).....	39
6. Static ataxia with eyes closed (in 40 cases).....	38
The remaining six were confined to wheel-chairs, and so were not tested with reference to the two last-named symptoms.	
7. Girdle sensation about trunk.....	34
8. { Constipation.....	30
{ Cold extremities.....	30
9. { Static ataxia with eyes open (in 40 cases). ..	29
{ Ataxia in locomotion (in 40 cases).....	29
10. Area of hyperæsthesia about abdomen and lower part of trunk with increased skin reflexes in the same area.....	27
11. { Loss of sexual power, partial or complete..	26
{ General feeling of weariness with diminished motor power.....	26
12. { Indigestion and stomach disorders.....	23
{ Considerable loss in weight.....	23
13. Myosis.....	22
14. Nervous irritability and despondency.....	21
15. Argyll-Robertson pupil.....	20
16. { Skin reflexes (plantar, cremasteric, and abdominal) increased.....	19
{ Incomplete retention of urine.....	19
17. Insomnia.....	18
18. Accelerated pulse (85 or above). .	17
19. Ataxia in arms.....	13
20. { Delayed sensations.....	12
{ Diplopia.....	12
21. { Skin reflexes absent.....	11
{ Partial incontinence of urine	11
22. { Ptosis (transient or permanent).....	10
{ Attacks of sudden vertigo.....	10
23. { Partial deafness.....	9
{ Partial iridoplegia.....	9
24. Plantar skin reflexes absent, or very much diminished, with other skin reflexes normally present.....	7
Tenderness along the spine.....	6
Diminished faradic irritability of muscles..	6
Diminished galvanic irritability.....	6
25. Unable to walk with crutches or two canes	6
Rise of temperature during paroxysms of pain	6
Optic nerve atrophy.....	6
Gastric crises.....	6
26. Laryngeal crises.....	5
Diarrhoea.....	4
Polyæsthesia.....	4
27. Unequal pupils.....	4
Pupils dilated.....	4
28. Complete retention of urine.....	3
Knee jerk exaggerated (ataxic paraplegia).....	2
Complicated with marked muscular atrophy with the electrical reaction of degeneration in muscles.....	2
29. Tremor in hands.....	2
Anæsthesia in face.....	2
Taste affected.....	2
Area of hyperidrosis about trunk.....	2
Knee-jerk present and normal.....	1
Knee-jerk present but diminished.....	1
Knee-jerk present in one limb and absent in the other.....	1
30. Complicated with general paresis.....	1
Traces of albumen in urine.....	1
Complete incontinence of urine.....	1
Trace of sugar in urine.....	1

THE VETERINARIAN IN BARBARY.

BY J. E. BUDGETT MEAKIN, A. M.

VETERINARY skill among the Moors is at about equal ebb with all their other science, though they certainly practice some drastic, and not always unsuccessful, measures. As with human beings, the favorite remedy is the hot iron. If the tendons of the foot are swollen or stiff, the skin is pricked with red-hot irons. If the shoulder is stiff, a circle within which is a cross is inscribed with a brand thereon; and so on. When on the ulcerated back of a beast of burden from which the saddle has not been removed for a week or two, to prevent the mutilated beast from rolling in the dirt, the proud flesh commences to be odiferous, a seton is usually inserted over the shoulders,—merely a piece of cord threaded through about six inches of skin, with a pack needle. Small sores under the saddle are considered a positive advantage, as rendering the animal more restive, and less liable to lag.

The saddles are usually badly stuffed. Whether the rich cloth-covered riding saddles, mounted on a dozen or more felt cloths of different colors, or the rude packs of goat hair-cloth stuffed with wool, or of canvas stuffed with straw,—all are huge, solid, ungainly things, so it is little wonder that few beasts are to be found with whole backs. The removal of a camel's saddle more often than not displays a skinless patch as large as a soup-plate. Pitch or black soft soap seem to be the only remedies applied.

When loading a pack beast, the general rule is to pile on the weight till the beast becomes unsteady on its knees as it stands, and then to mount on top of the load, it being well known that a larger load can be carried when in motion than when at rest. The same principle is applied to the loading of women with grass, straw, charcoal, fire-wood, and other articles of which they bring tremendous bundles many miles into town.

To urge four-footed burden bearers along, it is usual to keep pricking at one spot, often already a sore, on the shoulder or nape of the neck with a sharpened stick, a dagger, an old knife-blade, or an aloe-point. Saddle-animals are urged with the points of huge shovel-stirrups or stiletto-like spurs. A less repugnant means employed by those who ride empty pack-saddles is to keep the feet—both on the same side of the beast's neck—in constant motion.

Among the remedies administered internally the foremost place is contested for by rancid butter and gunpowder. The former is given chiefly for colds, and the latter for stomach complaints, though both are considered as near panaceas as possible. The gunpowder is usually made into a paste with soft soap prepared from olive oil and wood ashes.

But the Moors are not the only strange horse doctors in Morocco, as the following instance will show: A favorite horse had a bad fall, and while its wounds were healing, got into a generally disordered condition. The local European chemist was called in, a man who prided himself on being a practical horse doctor. His prescription was all the fresh grass it could eat, a bottle of port wine, and a bottle of hot senna tea. The last two I saw him administer consecutively, but with no result. Next day a consultation was arranged with the local European farrier, who advised the substitution of bran mash for green food, which he considered absolutely dangerous under the circumstances. His remedy was a pint or two of olive oil and exercise. This having likewise failed to secure improvement, a third European expert arrived on the scene, an advocate of bottled beer and barley grass. After two bottles of the former and a day's trial at the latter, the horse succumbed, and there only remained the bills to pay.

It frequently happens when the barley which forms the staple food of the horses, mules, camels, and donkeys, is new, that considerable irritation and swelling is caused in the palate, and to remedy this the native farriers are wont to make incisions therein, which generally have a favorable result.

The shoes employed in Morocco are thin, almost triangular plates, pierced in the center, and slightly turned up behind. The hoofs are pared to fit. An English gentleman, desirous of showing what our cart-horses were like, drew on the ground the size of one of their shoes. "Ay," replied the farrier, "but go up country, and you will find that our lord the Sultan — God send him victory! — has horses with hoof so big!" and he drew one twice the size. Not to be beaten, the foreigner sent home for a specimen shoe. On presenting himself with this in hand, the farrier quietly offered to make one twice the size, if he would pay for the trouble. Finally the Englishman sent home for a good sized cart horse skull. On taking this to his friend, all the answer he received was: "Now you've beaten me. I can make a shoe of any size, but *I can't make skulls* — that's not my trade!"

A NEW ELECTRODE FOR INTRA-UTERINE METALLIC ELECTROLYSIS.

BY J. H. KELLOGG, M. D.,
Battle Creek (Mich.) Sanitarium.

THIS electrode consists, first, of a nickel-plated brass body, A, carrying two set screws with corresponding openings, one of which is extended by a shoulder. Through this opening a copper wire of whatever size is desired, is passed. A piece of soft rubber gum-elastic catheter or small rubber tubing is slipped over the wire, and passed up over the shoulder, so that as the body A moves along the wire in either direction, the non-conducting shield will move with it. The second opening in the body is for connecting the conducting cord. The advantages of this device are several:—

1. It can be conveniently and thoroughly disinfected. Electrodes mounted upon hard rubber are very inconvenient

in this respect. Long boiling and a strong carbolic acid solution injure the rubber. Bichloride injures the metallic surface, as do other mineral disinfectants. In disinfecting this electrode it is only necessary to remove the field, which is immersed in a bichloride solution, while the metallic part is either boiled or immersed in a ten-per-cent carbolic acid solution. The shield is so inexpensive that a new one can be provided whenever required by simply cutting off a piece of gum-elastic catheter or a piece of small tubing of the proper length.

2. Another marked advantage in the use of this electrode is found in the protection of the cervical canal from the action of the metallic surface. After giving the electrode the proper shape, it is intro-

hering to it as the most convenient and, on the whole, most satisfactory of all.

The body, A, is made small enough so that even the smallest sized speculum will easily slip over it. The speculum can be removed after the electrode is introduced, before turning on the current. But removal of the speculum, although more comfortable for the patient, is not absolutely necessary, as the non-conducting shield is a perfect protection against metallic contact with it.

Rest in Heart Affections.—Lauder Brunton, the eminent English therapist, recommends absolute rest in cases of advanced mitral disease. Rest enables the circulation to recover its balance, the



A New Electrode for Intra-uterine Metallic Electrolysis.

duced into the uterus as far as possible, and then withdrawn a little, so as to avoid perforation of the uterine wall. The rubber shield is then slipped along over the wire until it passes into the cervix for a sufficient distance to afford the protection required.

3. The body, A, is the only portion of the electrode which cannot be quickly and inexpensively replaced, and this is in itself quite inexpensive. The same body answers for electrodes of different sizes. It is only necessary to have a number of pieces of copper wire of the proper length and of different sizes, as may be desired, to make one's outfit as complete as with an equal number of electrodes, and with a very small fraction of the expense. Ordinary copper wire answers perfectly for the purpose; there is, in fact, nothing better. It is only necessary that the extremity used for internal application should be carefully rounded off. The sizes which I find to be most useful are Nos. 7, 8, and 9. Other sizes are seldom required. After using this electrode for some time, and making a practical comparison with the other principal forms of electrodes which have been preferred, I find myself ad-

vised to use it as the most convenient and, on the whole, most satisfactory of all.

excessive accumulation of blood in the veins giving place to the proper distribution of the blood between the brain and the arteries; the dropsical effusion and general venous engorgement of the various organs, including the viscera, thus disappears. The change from absolute rest in a horizontal position to the vertical position, with gentle exercise, must be very gradual indeed. Massage and manual Swedish movements are of the greatest value in making the transition, and also in aiding the reestablishment of the normal circulation. The timely enforcement of rest, in cases of this sort, may save the beginning of the valvular malady of the heart, and thus by judicious management restore the patient to a condition of comparative health and comfort. We have found hot and cold sponging of the surface of the body of great value in the restoration of the normal balance of the circulation.

Dr. Brunton very properly calls attention to the danger of enforcing the rest cure too vigorously in cases of anæmic girls, who, by too prolonged rest, are likely to fall into a state of exhaustion in which the heart will receive greater injury than from gentle exercise.

TRANSLATIONS AND ABSTRACTS

[THE articles in this department are prepared expressly for this journal.]

TROGLODYTISM AND ALCOHOLISM IN THE ETIOLOGY OF TUBERCULOSIS.

BY DR. TISON.

A paper read at a recent meeting of the Society of Hygiene, of France.

Translated by J. H. Kellogg, M. D.

SINCE Willemin and Koch have demonstrated that tuberculosis is an infectious disease of microbic origin, and consequently contagious, it has become more than ever important to search out the causes by which the body may be placed in such a state as to render it less liable to infection by a disease for the cure of which we have, at the present time, found no sure means. Notwithstanding the fact that recent progress in therapeutics has made some positive advances in this matter, it is nevertheless true that the proper rôle of the physician is to prevent that which it is difficult for him to cure. It is then a question of hygiene of great interest. During my service at the Hospital of St. Joseph, I have had under my care a great number of cases of tuberculosis, in each of which I have sought to ascertain the source of the disease. I have found two special causes which have appeared to me to act the greatest part in the development of this disease. They are, troglodytism and alcoholism; that is to say, insanitary dwellings and the use of fermented drinks.

From the way in which men crowd their houses together, it would appear that the earth must be too small,—that it is not possible for each one to have his share of air and light. In the majority of cities most of the dwellings contain apartments which are never visited by the sun, and others which are always damp. Such houses are usually occupied by the poor, who have the greatest need to preserve their health, as daily labor is necessary to their material sustenance. Further, many lodging houses are so dark as to require, even at midday, the use of artificial lights. But when this light is furnished by gas, another evil appears; viz., the burning of the gas vitiates

the air, producing carbonic acid gas, moisture, and, in the summer time, excessive heat. This is the situation of a great number of the employees of banks, factories, etc.

In such conditions men are comparable to our prehistoric ancestors who lived in grottoes and caves, and for this reason are called troglodytes; but these modern troglodytes are far worse than the ancient, since the latter took refuge in their subterranean habitations only to sleep, and to secure protection from threatened dangers. The balance of the time they passed in the open air, exposed to the full light of the sun, occupied in fishing, in the chase, or in other bodily exercises favorable to health; while our modern troglodytes pass the greater part of their lives in their habitations, deprived of light, and exposed to a vitiated atmosphere. This is also true of the women and children of the laboring classes, who are compelled to spend the whole day in narrow tenement houses. This is what I call troglodytism, of which I spoke for the first time at the first congress held at Paris for the study of tuberculosis in man and animals.

Here is still another comparison which will render more evident this great evil: The crowded houses of our large cities resemble a mine,—not subterranean, but aerial,—in which the courts and staircases represent the galleries and shafts, but with this disadvantage, that while the miners pass only a part of the day under the earth in the pursuit of their labor, the women and children residing in such lodging houses spend almost their entire lives under these unwholesome conditions. Naples, Venice, Rome, and other Italian cities present these heaps of houses, separated only by narrow and often tortuous streets, which receive little sunlight, and in which the air is always vitiated. Italy is a country in which it was at first proposed to create special hospitals for rachitics, such as now actually exist at Turin and Milan. It is impossible that human beings living under such conditions should not become the prey of the microbes and the pathogenic germs with which they are surrounded, their systems not presenting the resistance necessary to prevent the development in their bodies of these germs.

What do we see, in fact? Such houses become, in times of epidemic, the centers

of infection, and the authorities, at the call of popular indignation, then make some little effort to remedy the evil, but as soon as the danger is past, nothing further is done.

These houses are full of tuberculosis. The disease develops especially in the women, who reside in them almost constantly, and in children, in whom the disease takes the form of scrofula. If one takes the trouble to visit the home of scrofulous, rachitic, and deformed children, he will see that they correspond to the description that I have given. I have collected numerous observations upon this subject, but I will not fatigue you with the repetition of the same facts and the same calamities.

Although the term *epidemic* is not usually applied to tuberculosis, it is nevertheless a perpetual and constant epidemic, which in the large cities of France furnishes one fourth of all the deaths. In Paris there are, on the average, one thousand deaths from tuberculosis every month. Now, if cholera took half so many victims, one would believe himself lost, and would take all sorts of precautions; insanitary tenements would be visited, disinfected, closed; the entire city administration would be on tiptoe, and the whole population in a state of excitement. But although we find ourselves in the midst of this incessant epidemic, we think nothing of it. It is this danger to which I have called attention, and which I still urge; for, in the newly constructed buildings of our large cities, in spite of an evident improvement in their sanitary construction, hygiene is still too much ignored. It appears to be forgotten that the more closely our habitations are crowded the greater the increase in mortality from tuberculosis. It is easily understood that in the Middle Ages, at a time when the safety of human life was not such as it is to-day, men were obliged to unite their dwellings in order to better secure to themselves an opportunity for reciprocal defense. But to-day these reasons do not exist.

I am a great partisan of liberty, and, finding that the authorities are each day depriving us more and more of our personal rights, I maintain that each one should be free to build for himself as he pleases the house in which he himself wishes to dwell. But the moment that a man undertakes to speculate upon human life in

building houses to be occupied by others, I hold that such structures, destined to be leased, should be built according to the rules of hygiene and sanitation. The administration should then step in and enforce necessary rules. Every house should present at least two sides to the light of day, one facing the street, the other the court. The inhabitants will then have the sun at least upon one side. Modern troglodytism will then disappear, as has that of prehistoric man, and at the same time would disappear this cause of constitutional enfeeblement which directly prepares victims for the tubercle bacilli. Often rich men who rent tenements to laborers and the poorer classes would hesitate to lodge their horses under such conditions; they would be afraid of losing them through disease.

The alcoholism which I combat is not drunkenness which the Latins call *ebriositas* (habitual state), in distinction from *ebrietas* (accidental state). I mean here, by chronic alcoholism, the state of the individual who takes each day a slight excess of alcoholic drink, without seeming to experience the slightest inconvenience therefrom. . . . Sooner or later there appear in the organism of man, modifications which by degrees produce lesions in his vital organism,—disturbances of the normal functions. The first which are observed are irritation and inflammation of the digestive tube, the functional evidence of which is loss of appetite, and an imperious disposition to increase the amount of drink in proportion as the food is diminished. In the morning, on awakening, the subject feels much as if he had not slept. He is seized with a guttural cough, and expectorates a viscid, glairy mucus which constitutes "the morning phlegm" (*pituite matinale*). Sleep is sometimes broken; the subject is restless, disturbed by unpleasant dreams in which sad ideas predominate, as visions of death, of burial, of fighting animals, wriggling serpents, and other reptiles, animals either in natural forms or fantastic shapes (*zoöpsie*). There are also nightmares,—dreams of attacks by robbers; pursuits of animals over precipices, and of falling into water swarming with fishes, serpents, or other animals. If dreams assume a professional form; that is, if they relate to the daily employment of the subject, they are of a sad character,

the individual usually being unable to succeed in his work. At other times, the subject is beset in his sleep by phantasmagoriae, the figures appearing either larger or smaller than in reality. These symptoms in relation to sleep should not lead immediately to the conclusion that the subject is an alcoholic, for they also occur in other morbid states, especially in nervous patients subject to hysteria or neurasthenia, and in gastro-intestinal disorders.

The diagnosis must be completed by means of other symptoms of chronic alcoholism which we will enumerate. Among these should be especially mentioned the trembling which is particularly noticeable in the hands and the tongue. To render these clearly manifest, the subject should be made to protrude his tongue as far as possible and hold it still. Fibrillar movements will be very noticeable, also a more or less general trembling of the tongue. The trembling of the hands will be most readily observed in the fingers when the subject stretches out his arms, and holds the fingers separated and slightly flexed. Slight oscillations will be observed in all directions, especially horizontally and vertically. When the alcoholism has arrived at a more advanced stage, it is only necessary to take the hand of the patient gently, as in feeling of the pulse, to observe the peculiar shaking, which is an exaggeration of the trembling.

To these symptoms should be added a peculiar *facies*. The individual has an air of hebetude, with a certain obtuseness of intelligence, and is peculiarly emotional. I do not apply this rule to the crapulous condition which is found in more advanced cases, but I have reference only to those cases in which the subject does not dream that he is taking alcoholics in excess, and is much astonished when informed that such is the case.

I should not forget to mention cramps in the calves. One easily comprehends also how an individual who eats little and drinks as much more as he eats less, and sleeps so badly that he has insufficient rest, must necessarily lose strength. Under these conditions the body becomes enfeebled, and is prepared for tuberculous infection.

It should be said that chronic alcoholics (I do not now speak of acute poisoning by alcohol, drunkenness, delirium

tremens, etc.) die through the alteration of five important viscera: the liver, (cirrhosis and dropsical cachexia), the brain (cerebral disturbances and insanity), the kidneys (nephritis), the lungs (pulmonary tuberculosis), and finally, the heart (arterio-sclerosis and myocarditis). That is to say, death occurs through disease of the organs through which alcohol passes, by absorption and elimination.

I may add, even, that the cases are not rare in which persons suffering from alcoholic cirrhosis or alcoholic insanity also present alcoholic pulmonary tuberculosis; and when I say that one of the causes of pulmonary tuberculosis is the enfeeblement of the individual by alcohol, I am able to prove the statement by the fact that tuberculosis thus induced is a special form of the disease, and presents characteristics of its own, which it is impossible to misunderstand. This form of tuberculosis ordinarily develops at an age long after that at which persons who are said, either rightfully or wrongfully, to have inherited tuberculosis, have succumbed to the disease; that is, between thirty years and extreme old age. It develops in persons who are, by birth, vigorous, strong, well organized, and whose parents and ancestors have not been tuberculous. One often sees robust men, as porters accustomed to carrying heavy burdens, succumb to this disease, because they imagine that in drinking alcohol they will add to their strength. This tuberculosis has a special predilection for the right lung, of which it first attacks the apex at the posterior part. This fact was first pointed out by Dr. Roussell, of Geneva, who made this point of distinction between acquired tuberculosis and the hereditary form of the disease, which most often commences in the left lung. However, this rule is not absolute, for acquired tuberculosis may develop in the left lung, though much more rarely.

Dr. Thorain, in his thesis presented before the Faculty of Medicine ("The Pathogenic Relation of Chronic Alcoholism to Pulmonary Tuberculosis," Paris, 1894), thus explained the occurrence of the disease in the right lung: "It is the summit of the right lung which is the seat of predilection in the tuberculosis of alcoholics. The anatomical disposition of its bronchial tubes is in more direct relation with the upper respiratory past sages of the three lobes of which it is

constituted, and consequently its more extended vascular field gives to the right lung a more active physiological life, and hence a greater exposure to the damaging influence of the alcohol carried into the blood of its circulatory network."

It has also been said that tuberculosis of alcoholic origin develops more rapidly than other forms of the disease. It is necessary to make here an important distinction, and to indicate precisely the time of the disease at which the observation of the patient is made. It will thus be seen that the disease develops as much more quickly as the organism offers less resistance to the invasion of the bacilli; for remedies are of little value in these cases, the diseased condition of the digestive canal rendering sufficient alimentation impossible. But if the first symptoms of the infection are observed at an early period, and the cause is recognized, the disease may often be controlled; and the control is as much more perfect as the reparative alimentation can be more easily affected.

The view which I sustain here, and which I publicly sustained for the first time at the second congress for the study of tuberculosis in man and animals, at Paris, at which I reported a great number of observations, is not new. For a long time it has been held by physicians of various countries, but it has hardly, as yet, been recognized as an established fact in medical science, although many important works upon the subject have been published. But if physicians are not yet entirely convinced, the time is certainly not far distant when the evidence will be too convincing to be ignored. For myself, I wish no further proof than the following passage from the new treatise on medicine published under the supervision of MM. Bouchard and Charcot, in the article, "Alcoholism," by M. Richardiere; the same remark applies to tuberculosis. "Alcohol cannot produce disease of itself, but it greatly favors it by preparing the soil by which the tuberculous germ is rendered fruitful. The tuberculosis thus created is generally a tuberculosis of advanced age; it runs a rapid course. The granular sputa are thin, and accompanied by abundant hemorrhages, which are facilitated by a previous bad condition of the pulmonary vessels. Very often the tuberculosis of alcoholics is accompanied

by grave hepatic disturbances under the form of fatty or tubercular cirrhoses."

Learned bodies accept new ideas very slowly, especially when they come from the outside. For how many years the old faculty of medicine battled against the theory of the circulation of the blood! Who can give courage to those who believe that the truth will always triumph in the end?

When the fact that tuberculosis may result from chronic alcoholism has been well established in the minds of the medical profession, greater efforts will be made to employ the proper means of prevention. When it shall be well recognized that alcohol is a poison, and that, as such, it must be taken only in medicinal doses, the people will begin to comprehend the danger to which they are exposed in drinking to excess. [If, as the writer states, alcohol is a poison, of which there can be no doubt, its use in any quantity as a beverage must be in excess.—Ed.] Then governments can more easily prescribe the measures necessary to moderate this plague, or even to suppress it. If they thus lose in revenue because less of this taxable liquid is sold, the loss will be more than made up in a lessening of the expense incurred by alcoholism, for police, hospitals, asylums for the insane, prisons, etc. According to many authorities, these expenses are much greater than the receipts from taxes upon alcohol.

It may be in place to inquire why the use of alcohol is so general at the present time. All of these causes cannot be recited, but a single one, for which physiology and science are responsible, may be mentioned. It has been claimed, and Liebig was especially one of the number who made this claim, that alcohol is necessary to the laborer to support his nutrition, and to give him the vigor indispensable to his work. According to those who have held these views, alcohol is a hydro-carbonaceous food, which, if it exists, is transformed into water, carbonic acid, and heat; if this is possible, and if this actually occurs with small quantities of alcohol, it is not true for large quantities, for when more than very small quantities are taken, we see the alcohol eliminated as alcohol, in the state of aldehyde, etc., by the lungs and kidneys, and we see lesions produced in all the organs through which it passes,—lesions of the digestive tube, of the liver, which receives

the alcohol through the portal vein, lesions of the lungs and of the kidneys, lesions of the blood vessels and of the nervous system, etc. This doctrine must be combated, and laborers must be taught that alcohol is not a food; that it does not nourish the body; that they will enjoy better health, and will have more vigor, if they will use in the purchase of food the money that they expend for drink. Many laborers think they are going to no excess when they take, every morning, one or two glasses of rum, a litre of wine at dinner, with one fourth of a litre of wine or cognac at four o'clock, and finally half a litre at supper. However, this quantity is sufficient to disturb nutrition. Others, especially those of the official class, never sit down to eat without taking absinthe, vermouth, etc. At the end of the meal they think it necessary to take cognac and other liquors.

[In publishing this paper the author added the following as a postscript:—]

Since this paper was written, I have read, in the *Mercredi Medical*, a résumé of a communication made by M. Carlos Geoffredi, at the congress at Rome, relating to the filtering power of the liver and the brain in alcoholic poisoning. It will be useful to add a few words with reference to these results, corroborative of the ideas which I have advanced above.

The experimenter administered various alcohols to healthy frogs, and also to frogs from which the liver had been previously removed, and to still others from which both the liver and the brain had been removed. In the frogs deprived of the liver the intoxication by alcohol was found to be more intense, more rapid, and more mortal. When an emulsion of the livers of frogs poisoned by alcohol was administered to a healthy frog, the typical form of alcoholism was produced, but the experiment succeeded still better upon frogs deprived of the liver. The action of the liver was found to be more energetic when the alcohol was absorbed by the stomach than when administered hypodermically. Frogs deprived of the brain were more sensitive to the action of alcohol than sound frogs. When deprived of both the liver and the brain, poisoning was produced by doses which had no effect upon sound frogs. The same effects were observed in mammifers (rabbits and cats) as in frogs. The effects in

both acute and chronic poisoning with alcohol were even more pronounced.

Special attention is called to the eighth and ninth conclusions by the author, which I quote as follows:—

"8. It has been demonstrated by means of accurate chemical tests that alcohol is not transformed either in the liver or in the brain, and that the chemical reaction of alcohol is not found in the spleen and muscles or the blood. The secretion of the kidneys and of the lungs has alone given the reaction of alcohol.

"9. In proceeding, with the especial means described, to the quantitative analysis of the alcohol in the secretions of the various organs of small cats, the following facts were noted:—

"(1) In a small cat poisoned by five centimeters of ethylic alcohol at 90°, the following quantities were found in the various organs: One cubic centimeter and a half of alcohol, or nearly a third of the entire amount in the liver; one cubic centimeter, or one fifth, was found in the brain. In the kidneys and the lungs, the organs through which alcohol is eliminated, a cubic centimeter was found. Some small traces were found in the muscles, and an inappreciable quantity in the food.

"(2) The accumulative action of the liver is best demonstrated by the administration, every day, of small doses in such a manner as to produce subacute poisoning.

"(3) If, in a chronic patient, the alcohol is suspended during a certain time, little by little the alcohol disappears from the liver and the brain, being eliminated either as alcohol, as some hold, or oxidized, as others believe."

We have here, it seems to me, most convincing proof against the theory which regards alcohol as a food which is transformed in the body. We also see that those organs which serve for the introduction and the elimination of alcohol are most affected,—the liver, brain, lungs, kidneys, also the heart and the arteries, which transport the poison.

Relation of Uric Acid to Urea on Different Diets.—According to Ritter, the relation of the uric acid to the urea on a normal diet is 1 : 36, on a mixed diet, 1 : 27.5; on a vegetable diet, 1 : 22. From this it appears that a person subsisting upon a mixed diet eliminates twenty-five per cent more uric acid than

a person whose diet is vegetable in character, while the person whose diet is exclusively of an animal nature eliminates more than sixty per cent more uric acid than a person whose diet is vegetable. This fact, taken in connection with the well-known prevalence of gout among beef-eating Englishmen, is very significant. The facts developed in the physiological laboratory are showing us more and more clearly, from year to year, the folly of subsisting upon a second-hand diet. The poisons derived from the flesh of lower animals through flesh-eating, are doubtless responsible for a vastly greater number of disorders than we are at present aware of.

Alimentary Value of Graham Bread.—M. Bardet recently communicated to the Society de Therapeutique an interesting paper upon the alimentary value of graham bread, an abstract of which we translate from the *Annuaire de Therapeutique* :—

"It is well known that Graham proposed the use of wheat bread containing all the constituent parts of the grain. Graham valued this grain especially because it was richer in proteid principles and fatty matter than white bread made from fine flour containing almost nothing but starch, and which excluded both the pericarp and the germ of the wheat grain. Graham bread contains all the constituent parts of the wheat. It is not bran bread, however, as it is sometimes termed. It differs from bran bread in the fact that, while like bran bread it contains bran, it does not contain the bran in the form of a gross mixture. In a word, graham bread is a bread made from flour consisting of an intimate mixture of all the constituent parts of the wheat very finely pulverized.

"The difficulty of obtaining a typical flour suitable for the fabrication of graham bread is the true reason which, up to the present time, has prevented the use of this bread, which contains highly valuable nutritive and digestive properties. But this difficulty I have succeed in surmounting by the aid of an intelligent miller. We have been able to obtain a flour of very fine quality which encloses all the constituents of the wheat, including the bran, the fatty matter, and the germs.

"In making bread of this flour it is mixed with not more than one tenth its weight of yeast, while for ordinary bread the proportion of yeast must be one third at least. The kneading must be energetic and prolonged, in order that the hydration of the flour may be complete. The dough is allowed to rise for a time after kneading, then submitted to prolonged baking. A loaf of graham bread weighing two kilograms (four and one half pounds) requires baking for one and one half hours instead of forty-five minutes, the time required for the baking of a loaf of ordinary bread of the same wheat. By this process we obtain a loaf well raised, with pronounced and agreeable odor, and which keeps for several days without drying.

"True graham bread, that is, bread made with graham flour properly prepared and not obtained by a simple mixture, is much more nutritive than ordinary bread. It is also more digestible, for the reason that it is less fermented. It is more nourishing, containing a larger amount of proteid and fatty matters, and is of very great therapeutic service in the employment of a vegetarian regimen, since it enables us to increase the amount of proteid substances absorbed without having recourse to flesh foods. This is a valuable service which graham bread may render.

"Graham bread may also be utilized in other directions which require food rich in proteid matters: 1. In persons who, while engaged in active labor, eat little meat; 2. In persons suffering from constipation, for the relief of which the bran contained in graham bread is also exceedingly useful."

Early Diagnosis of Phthisis.—Bernheim, of Paris, presented at the congress at Rome (*Bulletin Medical*) a paper in which he called attention to the importance of examination of the spleen and the lymphatic glands in cases of suspected tuberculosis. According to this observer, the spleen is always enlarged in cases of tuberculosis, even in the early stages of the disease. This is a new diagnostic point in tuberculosis, and one which should be carefully studied. As a bacteriological test, it is exceedingly valuable in advanced cases, and is also applicable when the disease is in an incipient stage.

BACTERIOLOGICAL NOTES.

[THE notes appearing in this department are abstracts or translations prepared expressly for MODERN MEDICINE AND BACTERIOLOGICAL REVIEW, from original sources.]

THE BACTERIOLOGY OF DIPHTHERIA.

MM. CHAILLOU and Martin reported in a recent number of the *Annales de L'Institut Pasteur* the results of researches made in the laboratory of Dr. Roux, of the Institute, which present some interesting facts in relation to the bacteriology of diphtheria, which we summarize as follows:—

1. The facts presented by a bacteriological study of this disease are in perfect accord with clinical symptoms. Each clearly defined bacteriological disease has a corresponding characteristic group of symptoms.

2. Diphtheria is present whenever inoculation of a proper culture medium gives colonies of the Klebs-Löffler's bacillus.

3. There are two great divisions of anginas and croups:—

(1) Those which are diphtheritic.

(2) Those which are not diphtheritic.

4. A bacteriological study of the diphtheritic group of anginas and croups divides them again into two classes:—

(a) Pure.

(b) Associated.

5. An early prognosis may be made in diphtheria by taking careful note of the bacteriological elements and clinical symptoms. In pure diphtheria the appearance of the bacilli, whether long or short, and their virulence, represent bacteriological facts worthy to be noted. The important clinical facts are, the pulse, the temperature, the respiration, the appearance of albumen in the urine, and the general state. From these elements a reliable diagnosis may be made. For prognosis, it is necessary to have, in addition, a knowledge of the associated microbes in cases in which a mixed culture is obtained. It has been clearly established that the presence of certain cocci with the specific bacillus of diphtheria hinders its development, and hence justifies a favorable prognosis; while the presence of others, especially streptococci, suggests a grave prognosis, as they favor the development of the disease.

The investigators add to the results of their researches a brief statement of the interesting facts communicated by Dr. Roux, at the International Congress of Hygiene, at Buda-Pesth. These experiments were for the purpose of determining the therapeutic value of antitoxic serums obtained from animals immunized against diphtheria by being accustomed to the diphtheritic toxine. The toxine is produced by cultivating the diphtheritic bacillus in bouillon exposed to the air. The results obtained were as follows: The cases in which pure culture of diphtheritic bacillus was obtained numbered one hundred and twenty, and nine deaths, or a mortality of 7.5 per cent.

The cases in which the diphtheritic bacillus was associated with other microbes resulted as follows: With small cocci, nine cases, all recovered; with staphylococcus pyogenes aureus, five cases, all recovered; with streptococcus, the extreme gravity of which is well known, thirty-five cases, twelve deaths or 38.28 per cent, the usual mortality being 87 per cent; in diphtheritic croup, not operated upon, fifteen deaths, a mortality of 30.6 per cent; in diphtheritic croup associated with streptococcus, operated upon, fifty two cases, thirty-three deaths, a mortality of 63 per cent.

Examination of Sputum for Bacillus Tuberculosis.—M. Lacour gives, in the *Bulletin Medical*, the following method of examining sputum for tubercle bacillus: A small portion of the thickest part of the sputum is spread out upon a cover glass dried and colored by the addition of two or three drops of the following solution:—

Aqua solution of phenic acid.....	10 parts.
Saturated alcoholic solution of fuchsin...	5 "
Alcohol, 95°.....	15 "

The cover glass is dried by placing it upon a metallic plate which is heated to such a degree as to dry the sputum without carbonizing it. The specimen is then examined without mounting. If no microbes resembling tubercle bacilli are seen, a new preparation is made. But if the result is satisfactory, the specimen is washed in 83° alcohol until as much as possible of the alcohol has been removed. The specimen is then plunged for two seconds, or longer, if necessary, in a solution consisting of one part nitric acid,

and five parts distilled water. This gives the preparation a yellow color. When the yellow color appears, the specimen is quickly withdrawn, and washed in 60° alcohol until completely decolorized. It is then washed with distilled water, and dried.

The process may end here, but if one has the time, double staining may be effected by means of methylin-blue, a solution which is prepared by dissolving one part of the color in 1000 parts of distilled water. A small portion of this solution is then placed in a watch glass, and the preparation placed in it for five minutes. It is then washed again with distilled water, and fixed upon the slide, upon which it is pressed firmly with the finger, covered with linen cloth. Stained by this process, the bacilli of Koch appear of a red color, while the other elements are white.

Simple Method for Obtaining Plate Cultures of Anærobic Bacteria.—In the *Centralbl. f. Bakt.*, Ahrens thus gives directions for obtaining plate cultivations of anærobic organisms: Cover the bottom of a common exsiccator of convenient size with rather coarse quartz sand which has been mixed with some dry pyrogallic acid. The inoculated material is then poured into one or more Petri dishes. These are placed uncovered in the prepared exsiccator. However arranged, they must be open above. Just before arranging these dishes, pour over the sand mixture a ten-per-cent solution of caustic potash; then seal the cover of the exsiccator. To enable a better observation of the developing colonies, cover the sand with black paper before setting in the Petri dishes. The mixture of pyrogallic acid and caustic potash readily takes up the oxygen. The process may be hastened by gently agitating the vessel, which does no harm after the medium has set. This apparatus does not require sterilization. An incubator might be used. To demonstrate that this method is efficient for absorbing the oxygen, expose agar plates to the air of the laboratory; then place some of them in the prepared vessel, and leave others where they are, merely covering them. No growth will develop on the former, while various molds and bacteria will grow in the latter. Ahrens obtains good results in the cultiva-

tion of anærobic organisms by this method.

Recent Discoveries in Relation to Bacteria.—Dr. Edward Long Fox, in his admirable address as president of the British Medical Association, at its recent annual meeting, summed up some of the most important recent advances in the science of bacteriology as follows:—

"It is well known now that abscesses caused by staphylococci have a tendency to remain localized, while those from streptococci are often followed by metastatic abscesses, as in erysipelas, puerperal fever, and ulcerative endocarditis. We know now that the tubercle bacillus is found in chronic bone disease; and that if this bacillus exists alone, the disease is a chronic one, while if the streptococcus pyogenes is present also, the disease is more quickly fatal; that the suppurations accompanying tuberculosis are due partly to the tubercle bacillus itself, or, rather, to the poisons resulting from the action of that bacillus, but partly also to other micro-organisms; that the bacillus diphtheriae is found chiefly on the surface of the false membrane, and that the fatality of that disease depends on the poison secreted by the bacillus diphtheriae, while the presence of streptococci renders the disease more grave, the increased virulence being due to the existence of both these organisms together.

"We find that accute pneumonia is caused by the pneumococcus of Talamon-Fraenkel, although often associated with the streptococcus pyogenes. This pneumococcus, too, may produce abscesses in patients free from pneumonia, as in purulent pleurisy, ulcerative endocarditis, and suppuration of the nasal fossæ. The fact that this microbe exists in the saliva of healthy people proves that these diseases have also a non-microbial element. Some condition of the sympathetic, influencing the caliber of the blood vessels, or some morbid condition of the vagus or of the accelerator nerves, or some inherited vulnerability, with all its possibilities, must probably be precedent factors.

"The typhoid bacillus is often accompanied by other micro-organisms, especially the streptococcus pyogenes or the staphylococcus aureus and albus."

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THE CAUSE OF OLD AGE.

PHYSIOLOGISTS have long been familiar with the fact that a characteristic change in the tissues takes place in advanced age, which, provided an individual dies a natural rather than a violent death, is the real cause of the termination of life. This change in the tissues is the result of a gradual shrinking of the arteries which marks the beginning of old age, and which occasions, as it progresses, a gradual starvation and shrinking of the tissues. The organs of a man of advanced years are all smaller than in the same individual when in his prime. The cause of this degenerative change in the arteries is a question which has been made the subject of much study and speculation. A few years ago an Italian bacteriologist proclaimed that he had discovered the "germ of old age." The idea was scouted by all scientific men, but there may be something in it, after all. At any rate there seems to be good ground for believing that germs, if not a specific germ, are at least one of the most important influences which bring on old age.

It has long been known that the ptomaines or toxic substances produced by microbes, are capable of setting up various degenerative processes. Degenerative changes in the joints, the liver, the kidneys, and other organs, have been directly traced to this cause. Dr. Dana, an excellent authority in nervous diseases,

has recently called attention to the fact that sclerosis and other degenerative changes in the brain and spinal cord are doubtless due to the influence of ptomaines absorbed from the alimentary canal. The writer has for some time held the opinion that the degenerative changes incident to advancing age are due to the same cause; namely, the toxines absorbed from the alimentary canal. These toxines are constantly present in greater or less quantity according to the extent to which fermentative and putrefactive processes prevail in the stomach and intestines. These processes depend, first, upon the integrity of the digestive process in the individual, and, secondly, upon the character of the substances introduced into the alimentary canal as food.

Laying aside the first consideration, supposing the individual to be in a healthy state as regards the condition of his digestive organs, we may draw important inferences in relation to the second consideration,—the kind of substances received into the alimentary canal as food,—from a study of lower animals. Herbivorous animals, such as the sheep, ox, deer, and others, are noted for the sweetness of their flesh, a quality which is appreciated not only by human beings but by animals of the carnivorous class, which are never known, unless severely pressed by hunger, to devour animals of their own class or other carnivorous animals, but to carefully select animals of the herbivorous class for their food. The strong and offensive odor of the flesh of the dog and other carnivorous animals, places them in wide contrast with herbivorous animals in this respect. The source of this strong odor is to be found in the characteristic difference in the contents of the alimentary canals of the two classes. The faecal matter of the dog and other carnivorous animals is in the highest degree putrescent and repulsive, while that of the herbivorous or

vegetarian animal is very much less offensive. The same is true with reference to the urine of the two classes. The strong odors connected with the body of the dog and other carnivorous animals evidently find their origin in the decomposition of flesh taking place in the alimentary canal. The decomposition of vegetable substances is rarely accompanied by the formation of extremely offensive or toxic substances, whereas the decomposition of flesh gives rise to poisonous substances of most extraordinarily loathsome and deadly properties.

These considerations suggest at once the thought that while all human beings must necessarily be constantly subject to the influence of toxic substances generated in their own alimentary canal, and consequently must grow old and succumb sooner or later to the degenerative processes of old age, these processes may be greatly accelerated by subsisting upon a diet which favors the production of toxic substances in the alimentary canal.

If this theory is correct, we should expect to find the greatest longevity among those animals and those men who subsist upon the simplest and purest diet, other conditions being equal. It would be impossible to find a sharper contrast than that which exists in this respect between carnivorous and vegetarian animals. Contrast, for example, the dog which grows old, becomes rheumatic and infirm in eight or ten years, with the donkey, which lives a useful life to forty or fifty years, and the elephant, which is still active and useful at a hundred years. The same is true among men. The greatest number of persons now alive above one hundred years of age, are to be found among Russian peasants who rarely taste meat. These people have been practical vegetarians for so many centuries — perhaps from the earliest ages — that anatomists have noted a distinct difference in the length of their alimentary canals as compared with those of the

flesh-eating Germans, whose ancestors were cannibals.

The Biblical and all other accounts of the early history of man, indicate that in the earliest ages the dietary of human beings was vegetarian in character, and that the longevity of man was very much greater than at the present time.

The close relation between the degenerative changes connected with the rheumatic or arthritic diathesis and those of old age has often been remarked. The rheumatic diathesis is quite incompatible with great longevity. Rheumatism in its protean forms is one of the most constant and distressing disorders of old age. The relation between English roast beef and the gout and rheumatism which prevail so extensively among Englishmen, was clearly pointed out by that distinguished physician and essayist, J. Milner Fothergill.

The above considerations, if not considered absolutely conclusive, are certainly worthy of thought.

THE FOOTBALL FOLLY.

PHYSICAL exercise is a good thing. It is essential for health. Gymnastics and physical training of various forms are certainly greatly neglected in this country, and unquestionably a physical deterioration has taken place in the American people in consequence of this neglect to give proper attention to the development of the body. Nevertheless, extremes are possible even in so good a thing as exercise, and we know of no better illustration of this fact than is afforded in the game of football, which has long been so popular in some of our colleges and universities. As generally conducted, this game is an actual war, and the combatants are by no means solicitous for the physical welfare of their antagonists, and generally, in the excitement of the game, become quite reckless of their own interests. Scarcely a summer passes without the record of several

deaths due to injuries received in football encounters ; and the list of broken bones, sprained ankles, and external and internal injuries of various sorts and of varying degrees of gravity, occurring every year as the result of football, would swell to hundreds. Some idea of the fierceness with which these games are fought may be gained from the following paragraph, which we clip from a recent paper : —

" Harvard has started out her football team in fine style. Summing up 'the easy practice' last week, it is stated that Gray, a most valuable man on the 'gridiron,' had his leg broken ; the 'backs,' Brewer, Wrightington, and Brown, are laid up with ankles ; and Conner, who had a good chance for 'fighting tackle,' had his collar bone broken. The long-haired kickers must console themselves with the philosophy that 'accidents will happen.' "

In the opinion of the writer it is high time that this barbarous game was suppressed. There seems to be a strange inconsistency in the state of public opinion in relation to this matter. There are very few States in the Union where prize fighting or fighting without prizes is tolerated. If two men get together in a hall or on a public square and spend a half hour bruising each other, they are arrested and properly punished. But if a score of men gather upon a public square for the same purpose, one half fighting against the other half with all the vehemence and ferocity of beasts of the forest, only keeping within the limits of certain rules which by no means afford any adequate protection to life and limb, the public gathers in thousands and applauds, and the officers of the law find no occasion to interfere.

The purpose of this article is to help educate popular sentiment to a state of greater consistency. There are ample means for proper training and the development of the body without resorting to those which are brutal in character, and

which incur the danger of inducing life-long injury, or even an immediately fatal result.

THE INCANDESCENT ELECTRIC-LIGHT OR RADIANT-HEAT BATH.

THE *Electrical Review* publishes the following abstract of a paper read by the editor of this journal upon the subject named, before the American Electro-Therapeutic Association, at its late meeting in New York City : —

" Another paper of consequence was on 'The Incandescent Electric-Light or Radiant-Heat Bath,' by Dr. Kellogg, of Battle Creek, Michigan, who claims to have first constructed a bath of this kind, several of which he has had in use for the last three years. The bath is made in the form of a cabinet with fifty or sixty incandescent lamps arranged in rows inside, the spaces between the lamps being covered with glass mirrors. Other forms have been constructed for local application. Siemens showed in 1880 that the electric light promotes growth in plants, encourages development of chlorophyl, and the setting and ripening of fruits. Similar experiments with like results were previously made by Hervé-Mangon and Prillieux, and have been more recently repeated (1889-90) with identical results at the Cornell University Agricultural Station. Dr. Kellogg draws from these experiments the following general conclusions : 1. That the electric light is, qualitatively, fairly comparable to sunlight in its power to promote protoplasmic activity. 2. That it acts as a true vital stimulus, converting night into day for the plant, and counteracting the deleterious effects of artificial conditions, such as stove heat. To determine more exactly its physiological properties upon human beings, and its therapeutic value, Dr. Kellogg has conducted in the laboratory of hygiene, of the Battle Creek Sanitarium, a series of experiments, the results

of which he presented in tabular form, and which justify the following conclusions:—

“1. The incandescent electric-light bath increases the production of CO₂, and hence stimulates tissue metabolism. The amount of increase in a bath of thirty minutes' duration was nearly fifty per cent (3.60% to 5.13%).

“2. The urea and total chlorides were somewhat diminished by the bath, owing to the greatly increased activity of the skin.

“3. Vigorous perspiration was induced at a temperature below that of the body (85° F.), and in half the time required to induce perspiration in a Turkish bath at 106° F. The action of the electric light is entirely independent of the temperature of the surrounding air.

“4. The incandescent electric-light bath possesses many advantages over the Turkish, Russian, vapor, and hot-air baths, chief of which are: (1) The penetrating power of radiant heat, which is far superior to the convective heat of the baths mentioned; (2) The superior stimulating effect upon tissue metabolism; (3) The readiness with which perspiration may be induced when desirable (one to three minutes); (4) The low temperature of the surrounding air, which permits the full effects of the bath; (5) The readiness and accuracy with which the dosage of the application may be regulated; (6) The wide range of application, which admits of the use of the bath for a tonic and sedative as well as alterative and spoliative effects.

“5. The incandescent electric light is superior to the arc light for therapeutic purposes, for the reason that it may be more readily and evenly distributed, and is free from the injurious effects which have been shown to result from too close proximity to the arc light.”

DILATATION of the stomach exists in fully one half of all cases of constipation.

A NEW LUBRICANT FOR GYNÆCOLOGICAL USE.

THE need of a suitable lubricant for use in gynæcological practice has long been patent to all who have undertaken to do aseptic work, to reduce the danger of carrying infection from one patient to another, to the minimum. Olive oil, cocoanut oil, vaseline, plain and carbolized, and various other unguents are recommended by various authorities, and are in quite general use, but all of these substances are open to the great objection that they are more or less difficult to remove from the hands, and retain not only the foul odors derived from malignant and malodorous cases which are frequently encountered, but also the microbes of various sorts which are derived not only from the sources referred to but which are likely to be encountered in any case.

It is well known that oils especially favor the retention of germs in contact with the skin, and also render their destruction by ordinary disinfecting agents, such as can be used for disinfecting the hands, almost wholly ineffectual. Many gynæcologists have sought to avoid this difficulty by substituting soap for oils of any sort, but two objections are still present,—namely, the irritating character of the alkali which the soap contains and its oleaginous base. The first difficulty may be overcome by employing a neutral soap, but the second is by no means easily removed. Nevertheless, soap is so much superior to vaseline, that the writer has employed it as a lubricant for many years.

Through the kindness of Dr. E. C. Dudley, of Chicago, we have recently had placed in our hands a specimen of a new lubricant which he has perfected, after many years of experimentation, the basis of which is glycerin. The lubricant contains glycerin, gum tragacanth, boric acid, starch, and volatile disinfectants, and serves the purpose of a lubri-

cant as perfectly as can be desired. It has, at the same time, other properties which are interesting and useful. When the hands are well covered with this lubricant, the skin seems to be protected from the absorption of the ill-smelling, soluble substances which are encountered in vaginal and rectal examinations, so that when the glycerin is washed off, the fetid substances and other impurities are washed off with it, and one does not need to spend an hour or two at the washbowl scrubbing his hands with strong soap and a nail-brush after the examination of a case of rectal cancer, to get rid of the horrible odors of skatol and decomposing flesh.

The composition of the unguent is such that it is readily soluble in water, so that the hands can be thoroughly cleansed almost in an instant by simply holding them in a stream of water, without the need of soap and a nail-brush.

Another advantage possessed by this incomparable lubricant is the fact that if any tendency to chapping of the skin exists, it is readily cured by the thorough cleansing which is effected, and by the healing properties of glycerin.

The writer has adopted the unguent not only as a lubricant for use in gynaecological practice, but also as an aid to asepsis in the routine preparation for work in the operating room. Soap is no longer necessary for this, and with the disuse of soap and a more perfect cleansing of the hands, there is less left to be removed by ether or alcohol, and less to be killed by the disinfectants, so that the asepsis is rendered more complete.

This excellent preparation is manufactured by Parke, Davis & Co., under the name of Unguentum Glycerin.

The thanks of the profession are certainly due to Dr. Dudley for his painstaking effort to discover an ideal lubricant, and he is to be congratulated that his efforts have been attended by complete success.

Hydrotherapy in Fractures.—More than twenty years ago the writer adopted the practice of treating fractured limbs for a short time with various applications of water before putting the parts into a permanent dressing. By this means it is found possible to avoid much of the pain, swelling, and discomfort which the patient usually suffers during the first few days after the application of the dressing, and to secure more speedy and complete union, with less disability of the overlying muscles and the contiguous joints. We have frequently found hot fomentations most useful in these cases. The application of hot fomentations, or soaking the affected parts in hot water for an hour or two, almost invariably has the effect to relieve pain from circulation in the contused vessels, to prevent swelling, to overcome muscular spasm and rigidity, and to promote the recovery of the patient. If there is much displacement of the fragments, it is, of course, important that the parts should be drawn as nearly as possible into position. The parts can be retained by a temporary pasteboard splint and light bandage during the application until the permanent dressing is applied. Dr. T. Morton, of Philadelphia, recently reported a case (*New England Medical Monthly*) in which an un-united fracture of the leg was made to unite three or four months after the accident occurred by applications of hot water and massage.

The Bicycle in Relation to Health.

The Pope Manufacturing Company, of Boston, has recently issued a little pamphlet with the above title, which gives the opinions of a large number of physicians in relation to the utility of the bicycle as a mode of exercise for the promotion of health.

More than seventy-five physicians testified to the merits of the bicycle as a health-promoting means. The writer has known a number of chronic invalids who

have ridden themselves into health on a good bicycle. The writer is personally indebted to a Columbia for improvement in health after a severe attack of la grippe, and ability to do continuous hard work with seldom a day off. The pamphlet contains many valuable suggestions in relation to riding, one of the best of which is from Robert J. Roberts, Professor of Gymnastics in Boston. Professor Roberts says: "Why will so many of you sit on your seats like monkeys on a stick, and try to grind your noses off on your front wheel?" Mr. Roberts asserts that no occasion can arise in the use of the bicycle which requires a person to sit "with his back humped up like a camel." We entirely agree with Professor Roberts. Nothing does greater discredit to bicycle-riding than the way in which some city dudes lie down upon the front handles in the effort to make the public believe that they are cultivating great speed in preparation for a tournament. Sanger, a noted fast rider, sits upon his wheel as erect as a post.

REVIEWS.

Annual of the Universal Medical Sciences.—Published by The F. A. Davis Co., Philadelphia, Pa.

The enterprising publishers of this compendious work are already on hand with the edition for 1894. It requires but a cursory examination on the part of the intelligent practitioner who is abreast of medical progress to see that this work is indispensable to every man who wishes to keep within sight of the advances being made in all branches of medicine.

The "Annual of the Universal Medical Sciences" was certainly a bright idea, and an idea which has been so well elaborated from year to year that the Annual has become indispensable to every progressive physician. No physician who has any considerable amount of practice has

the time to go through the thousands of medical journals and cull out from them the few kernels of wheat among a mass of chaff. It is probable that there is not a physician in the United States who possesses the linguistic knowledge necessary to enable him to read medical papers in all the different languages in which original and valuable medical facts are now given to the profession. An enormous corps of writers of unusual talent must be required to collate the vast amount of information and useful material which each annual edition of this magnificent work presents. The Annual for 1894 is not a whit behind its predecessors in the intrinsic value of its contents and the care with which it has been prepared.

Literary Note.—The well-known house of The F. A. Davis Co., of Philadelphia, will issue, this month, a work which will be most favorably received by the medical profession. It is entitled, "Obstetric Surgery," and is written by Drs. Egbert H. Grandin and George W. Jarman, gentlemen who, from their long connection with the largest and most widely known maternity hospital in the United States (the New York Maternity Hospital), are peculiarly fitted to expound the subject from the modern progressive standpoint of election.

There is no work in any language which deals with the surgical side of obstetrics so thoroughly as the present. The rules of obstetric asepsis and antisepsis are so described and simplified as to enable even the busy general practitioner to surround his patients with the same safeguards as are guaranteed in well-ordered hospitals. The subject of pelvimetry, without due regard to which modern obstetric surgery cannot exist, is most tersely and exhaustively treated. The indications under which artificial abortion and the induction of premature labor properly fall are clearly exemplified. The limitations of the forceps and of version, and the benef-

icent results to be secured through timely resort to symphysiotomy and Cæsarean section, are stated with the accuracy which the marvelous progress of the last few years allows. The surgical aspects of the puerperal state are carefully described, and the concluding chapter deals with the surgical treatment of ectopic gestation.

The work having been prepared from a teaching standpoint, the terse text is elucidated by numerous photographic plates and woodcuts, representing graphically various steps in operative technique. The student and the practitioner, thus, not alone may *read* what to do, but may also *see* how to act.

The work is not burdened with literary references. The authors have aimed to teach that which ample and prolonged experience has taught them is good. The net price of the volume will be \$2.50, and it will be printed in large, clear type, on excellent paper, and handsomely bound in extra cloth. The full-page plates, about 14 in number, will be printed on fine plate paper, in photogravure ink.

A companion volume, dealing in the same terse, practical manner with pregnancy, normal labor, and the physiological and pathological puerperium, is in active preparation by the same authors.

We especially endorse his remark in reference to ventilating ducts, that it is "very undesirable that they be connected in any way with 'dry closet' systems." The author's statement that 3600 cubic feet of air per hour, or sixty cubit feet of air per minute, is requisite for each individual in an assembly room, shows that he has given the subject of ventilation from a hygienic standpoint careful study in the light of the most recent researches upon this important question. This is the first practical manual of hygiene which the writer has encountered in which the subject of ventilation has been treated in so practical and satisfactory a manner.

Bladder Gymnastics and Auto-Irrigation.—By Byron H. Daggett, M. D., Buffalo, N. Y.

In this paper the author gives the results of his experience with his canula, for washing out the bladder without the use of a catheter. After two years' use of the canula, he finds that nineteen out of twenty patients may be taught to irrigate the bladder by its aid, the only exceptions being those patients having a large prostate or a stricture.

Syllabus of Lectures on Human Embryology.—By W. P. Manton, M. D. The F. A. Davis Co., publishers, Philadelphia, Pa.

This book is intended not only as a text-book, but as an aid to the student in classroom work, the printed headings serving as aids to the student in taking notes from instruction by the teacher. Every other leaf of the book is blank. The text contains a great number of outline drawings which the student is expected to fill in. No student, certainly, could have occasion to complain that the way was not made easy for him, if provided with the assistance afforded by this book, which seems excellently adapted to the purpose designed by its author.

Practical Hygiene: Outlines of Practical Hygiene Adapted to American Physicians.—By C. Gilman Currier, M. D., New York. E. B. Treat, publisher.

Dr. Currier as visiting physician of several New York City hospitals and a practitioner of wide experience, has had abundant opportunity for becoming possessed of the material necessary for preparing a volume of notable value. This little work contains much that is new on the subject of hygiene, and little that is obsolete. The author's treatment of the subject of ventilation is particularly good.

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TRIONAL is a nerve sedative and hypnotic which has given satisfactory results in simple agrypnia, mental excitement, and delirium accompanied by obstinate insomnia, and in narcotic habitués. It acts promptly, safely and effectively. When pain exists Trional may be combined with Phenacetine. Supplied in ounces and tablets.

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ARISTOL is a convenient, agreeable and effective dressing in major and minor surgery, dentistry, diseases of the eye, ear, nose, and in burns. Aristol adheres closely to wounds and membranes, and may be used in powder, or in the form of ointments, oils, collodions or etherial solutions. It is supplied in ounces only.

LOSOPHAN or Triiodocresol has given excellent results in the treatment of mycotic diseases, such as ringworm, scabies, pityriasis versicolor, the chronic forms of eczema, prurigo, sycosis, acne and pediculosus. Losophan should be thoroughly dissolved in oils, and not simply combined with ointments. It is supplied in ounces only.

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PHENACETINE-BAYER is indicated in all acute, inflammatory, febrile conditions, and all forms of pain. It is the safest, while the most active and reliable of the antipyretics and analgesics. Phenacetine-Bayer is supplied in ounces, tablets and pills; also in pills and tablets combined with Salophen, Sulfonal, quinine, caffeine, etc.

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Dermic Stimulant

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PAMPHLETS FORWARDED ON APPLICATION.

W. H. Schieffelin & Co., New York.

PUBLISHERS' DEPARTMENT.

LYCETOL.—This preparation is a tartrate of dimethyl piperazin, and is claimed by Dr. Witzack to be fully as effective as the base piperazin. It is claimed for this drug, that it is a pronounced uric acid solvent, and, in addition, that it is a diuretic and increases the alkalinity of the blood. Its taste is agreeable, and it is non-hygroscopic. Witzack has experimented in seven cases of uric acid diathesis, with the following results:—

1. Increased secretion of urine.
2. Substantial diminution of gouty symptoms, and improvement in urinary and gravel cases.
3. No disturbance in general health.

The drug is manufactured by Friedr. Baer & Co., of Elberfeld, and introduced into this country by W. H. Schieffelin & Co., New York.

FERRATIN.—Boeringer and Soehme, of New York, have introduced to the profession in this country a preparation known as Ferratin, which, according to Professor Germain Sée, is indicated in the following cases:—

“Those suffering from anæmia from hard work, though the patient have the appearance of good health.

“Those of both sexes affected with chlorosis.

“Those weakened by too rapid growth and puberty.

“Those fatigued by study; and, in short, all in whom a diminution of red blood corpuscles has ensued, due no matter to what causes.”

FREDERICK STEARNS & CO. are giving special attention to the preparation of Kola extracts and cordials, which, it is claimed, possess all the properties of caffeine combined with those of theobromine and coalanine. Coalanine has been claimed to possess many of the properties of cocoa, without the enslaving power of the latter drug. These preparations are especially recommended as cerebro-spinal stimulants, and for “those whose work subjects them to excessive mental or physical exhaustion.” It must be remembered, however, in the use of all preparations of this sort, that they have the disadvantage of all stimulants, that they do not actually impart energy to the body, but simply diminish the fatiguing effects of exhausting labor for the time being. The experiments of Dr. Edward Smith seem to show that this effect is only temporary, hence the work done under the influence of stimulants of this class, though less fatiguing at the time, produces greater exhaustion afterward.

CALIFORNIA FIG SYRUP.—This extensively used laxative, although called “Syrup of Figs,” is not claimed by the manufacturers to be simply a syrup of figs, but is admitted to contain, as its most active ingredient, the well-known purgative, senna, which, it is claimed, is so treated as to deprive it of its griping and other unpleasant properties, and its unpleasant taste disguised by the admixture of figs with various aromatic flavoring substances.

Laxatives are doubtless much too generally employed. They are sometimes useful, but should be dispensed with by a regulation diet, exercise, and other means, when possible. We have never thought it wise to encourage the introduction of so-called family medicines, especially the patent nostrums which are so widely vended. It appears, however, that this preparation can hardly be placed on a level with the ordinary proprietary drugs, since the manufacturers make no secret of its composition, and apparently deal fairly with the profession and the public.

CASCARA SAGRADA IN URIC ACID DIATHESIS.—Dr. W. H. Walling recently contributed an article to the *Medical and Surgical Reporter* in which he recommends Cascara Sagrada (Parke, Davis & Co.'s Aromatic Fluid Extract), in ten or fifteen drop doses, from one to three times daily, as more valuable in the treatment of “uric acid storms,” and other symptoms arising from “defective food or tissue metabolism” commonly attributed to uric acid diathesis or lithiasis, than in disorders resulting from the so-called antilithics.

Our experience entirely agrees with that of Dr. Walling, whose conclusions are drawn from clinical observation, and are in entire accord with those now known as the etiology of this condition. The idea that uric acid diathesis is due to a “torpid liver” is rapidly becoming obsolete. This condition is unquestionably more often dependent upon imperfect food metabolism than any other one cause. In consequence of defect in the digestive process, the nitrogenous elements of the food enter the blood imperfectly elaborated, and act as poisons in the system instead of furnishing material for tissue rebuilding. The most common cause of this condition is stomach and intestinal sepsis. Dujardin-Beaumetz and others have shown that Cascara Sagrada is a valuable remedy under these conditions. Doubtless also the aromatics employed in the preparation referred to exert some useful influence as an antiseptic.

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Non-Alcoholic Kumyss

AFTER careful and long-continued experiments, we have devised a method of preparing kumyss which is not only free from alcohol, but also possesses other advantages of a superior character. Ordinary kumyss contains a considerable amount of alcohol, due to the fermentation of cane sugar, which is added for the purpose of producing carbonic acid gas. The amount of alcohol depends, of course, upon the amount of sugar added and the age of the kumyss. The sugar is made to ferment by the addition of yeast. Kumyss made in this way contains yeast alcohol, and if the alcoholic fermentation is not complete, a variable quantity of cane sugar. In addition, ordinary kumyss contains a variety of toxic substances, resulting from the development of the miscellaneous microbes, which are usually found in the milk.

The improved form of kumyss which we offer is made from sterilized milk, and by processes which render it absolutely uniform in quality. The method of manufacture is such that its constituents are definite and constant. It is more palatable than ordinary kumyss, in consequence of the absence of foreign microbes, and is particularly suited to cases in which milk in its ordinary form disagrees with the patient, and in which so-called "biliousness" is a troublesome symptom. Cases of hypopepsia are rapidly benefited by it. It is also of great service in the treatment of gastric neurasthenia, or nervous dyspepsia.

It is extensively used in some of the largest medical institutions in the country, and has received the highest commendation from those who have investigated its merits. This kumyss is put up in pint and quart bottles, and will be shipped to any address at the following price.—

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THE IMPROVED "YALE" SURGICAL CHAIR.

HIGHEST AWARD WORLD'S FAIR, OCT. 4TH, 1893.



Fig. V—*Semi-Reclining.*

- 1st. Raised by foot and lowered by automatic device.—Fig. I.
- 2nd. Raising and lowering without revolving the upper part of the chair.—Fig. VII.
- 3rd. Obtaining height of 39½ inches.—Fig. VII.
- 4th. As strong in the highest, as when in the lowest position.—Fig. VII.
- 5th. Raised, lowered, tilted or rotated without disturbing patient.
- 6th. Heavy steel springs to balance the chair.
- 7th. Arm Rests not dependent on the back for support.—Fig. VII—always ready for use; pushed back when using stirrups—Fig. XVII—may be placed at and away from side of chair, forming a side table for Sim's position.—Fig. XIII.
- 8th. Quickest and easiest operated and most substantially secured in positions.

- 9th. The leg and foot rests folded out of the operator's way at any time.—Figs. XI, XV and XVII.
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- 11th. Affording unlimited modifications of positions.
- 12th. Stability and firmness while being raised and rotated.
- 13th. Only successful Dorsal position *without moving patient.*
- 14th. Broad turntable upon which to rotate the Chair, which cannot be bent or twisted.
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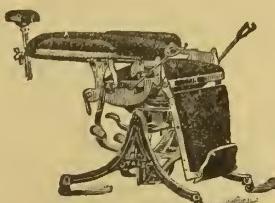


Fig. XVII—*Dorsal Position.*

SABIAN



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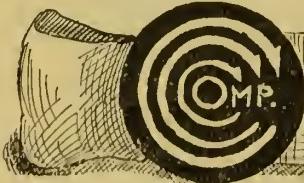
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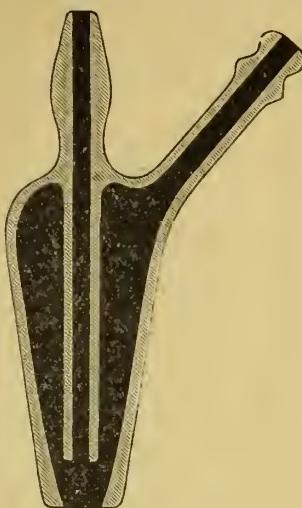
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A CONVENIENT EAR DOUCHE.



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The accompanying cuts illustrate an instrument which is devoid of danger, and is so convenient in use that with it an ear douche may be administered for any desired length



of time, and with the patient in any position. It is simply an arrangement by which the hot water which runs into the ear from the fountain douche, or siphon, is carried away by means of a tube to any conveniently placed receptacle.

The instrument is made of hard rubber, is indestructible, and ought to be in every family.

Price to physicians, postage paid, 75 cents.

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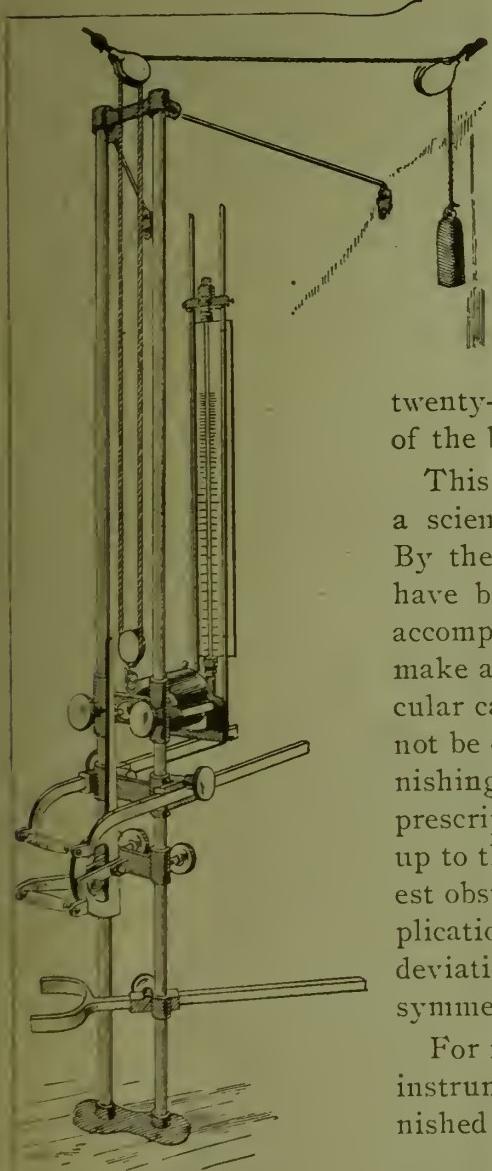
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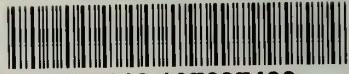
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